

THE JOURNAL
OF THE
ANTHROPOLOGICAL INSTITUTE
OF
GREAT BRITAIN AND IRELAND.

FEBRUARY 8TH, 1876.

Colonel A. LANE FOX, *President, in the Chair.*

The minutes of the last meeting were read and confirmed.

The election of the following member was announced:—
E. J. BARRON, Esq., F.S.A.

The following list of presents was read, and thanks were
voted to the respective donors for the same:—

FOR THE LIBRARY.

- From the SOCIETY.—Proceedings of the Royal Geographical Society.
Vol. XX. No. 1.
From the INSTITUTE.—The Canadian Journal. Vol. XIV. No. 6.
From the AUTHOR.—Bibliothèque des Sciences Contemporaines.
By Dr. Paul Topinard.
From the AUTHOR.—Angola and the River Congo. 2 vols. By
J. J. Monteiro, Esq.
From the SOCIETY.—Proceedings of the Royal Society. Vol.
XXIV. No. 165.
From Messrs. LONGMANS & Co.—The Native Races of the Pacific
States of North America. Vol V. By H. Bancroft, Esq.
From the EDITOR.—Revue Scientifique. Nos. 29, 30, 31, 32. 1876.
From the SOCIETY.—Bulletin de la Société Imperiale des Natu-
ralistes de Moscow. No. 2. 1875.
From the INSTITUTION.—Report of the Smithsonian Institution.
1874.
From the EDITOR.—Materiaux pour l'Histoire de l'Homme. 1875.
From the ASSOCIATION.—Journal of the Royal Historical and
Archæological Association of Ireland. Vol. III. No. 23.
From JAMES BURNS, Esq.—Human Nature for January, 1876.
From the EDITOR.—Nature (to date).

The DIRECTOR read the reply of Mrs. Goodenough to the letter of condolence addressed to her on November 9th, 1875.

The following resolution, moved by Captain BEDFORD PIM, R.N., M.P., and seconded by Mr. JOHN EVANS, F.R.S., was then carried unanimously :—

Resolved—That a vote of condolence be passed to the widow of Dr. Richard King, the eminent Arctic Traveller and founder of the Ethnological Society, who died on Friday last, the 4th inst., and whose services to the nation, to ethnology and anthropology, and to the medical profession, are well known to all of us.

The following papers were read by the authors :

ON THE ORIGIN of the SOUTH SEA ISLANDERS, and on SOME TRADITIONS of the HERVEY ISLANDS. By REV. W. WYATT GILL, B.A.

MR. ALFRED WALLACE, in his admirable book, entitled “The Malay Archipelago,” has advanced the theory that the Polynesians are descended from a race which once overspread a vast submerged southern continent. As the land gradually sank, a few of the aborigines may have escaped to the tops of the loftiest mountains, around which subsequently coral reefs formed. Admitting that Polynesia is pre-eminently an area of subsidence, and its great wide-spread groups of coral reefs may mark out the position of former continents, still I apprehend that Mr. Wallace’s inference is unwarranted, for—

1. Supposing that human beings inhabited this great southern continent at the period of the subsidence, and that a remnant escaped, I cannot believe that human life could, under such circumstances, be sustained for any considerable time, as usually there is nothing edible on the tops of the Pacific mountains, save berries, to say nothing of the difficulty in most cases of obtaining water.

2. The theory is utterly opposed to the native accounts of their own origin, which all point to the north-west.

3. The spread of the race can easily be accounted for on the basis of historical facts. In 1862 I saw on Manuâ, or easternmost island of the Samoan group, an open boat which had accidentally drifted from Moorea, a distance of 1,250 miles, and no life lost. A few months later in the same year, Elikana and his friends drifted in a canoe from Manihiki to Nukuraurae, in the Ellice group (lying N.W. of Samoa), a distance of some 1,360 miles. Half of the party on board perished from want of food and water. In both these instances the drifting was from east to west before the trade winds. A far more remarkable event occurred in January, 1858, during the prevalence of the violent westerly

winds, when a numerous family of adult natives drifted from Fakaofu, in the Union group, north of Samoa, to an uninhabited spot known as Nassau Island, thence to Palmerston's Island, and, finally, to Mangaia (where I lived), altogether a distance of upwards of 1,200 miles in a south-easterly direction.

4. The colour, hair, general physiognomy, habits, character, and especially the *language* of the Polynesians clearly indicate a Malay origin. This cannot be accidental. My impression is that long ages ago the progenitors of the present race entered the Pacific from the south-eastern fork of New Guinea, but were driven eastward by the fierce Negrito race. The greatest distance from land to land, as they pressed eastward, would be from Samoa to the Hervey group, about 700 miles, which, as we have seen, has been successfully traversed by natives in their fragile barques within my own observation.

The classical word for nether-world in the dialect of the Hervey group is Avaiki, in Tahitian Hawaii, in New Zealand Hawaiki. The universe is conceived of as the hollow of a vast cocoa-nut shell, in the interior of which are many lands, the abode of unhappy ghosts and infernal gods. Near an aperture at the top of this vast shell, on the outside, are located their island homes. Rising one above another into immensity are at least ten separate heavens, constituting the elysium of the brave. Sometimes the gloomy region beneath is called "po" or "night." Originally mankind and the natives of Avaiki interchanged visits at will through the aperture at the top, which is now closed on account of the continual depredations of fairy visitors. Now two modes of access alone exist to nether-world—

1. By following the bright track of the sun-god Rā, and entering in his train the domains of Night.

2. By treading on a branch of the sacred *bua* tree (*Fagraea berteriana*), or Mystic Tree of Death.

Native song and myth delight in recounting the adventures of those who have visited spirit-world. Especially rich are the Hervey Islanders in pathetic "laments" over those who have followed the sun-god Rā into the gloomy region of Avaiki. These exile spirits, clad with bind-weed and flowers of the heliotrope, obey the commands of a leader, who fixes the time for their departure.

The esoteric doctrine of the priests was, that souls leave the body ere breath has quite gone, and travel on to the edge of a cliff facing the setting sun (Rā). A large wave now approaches the base of the cliff, and a gigantic *bua* tree, covered with fragrant blossoms, springs up from Avaiki to receive on its far-

reaching branches human spirits, who are mysteriously impelled to cluster on its limbs. When at length the mystic tree is covered with human spirits, it goes down with its living freight to nether-world.

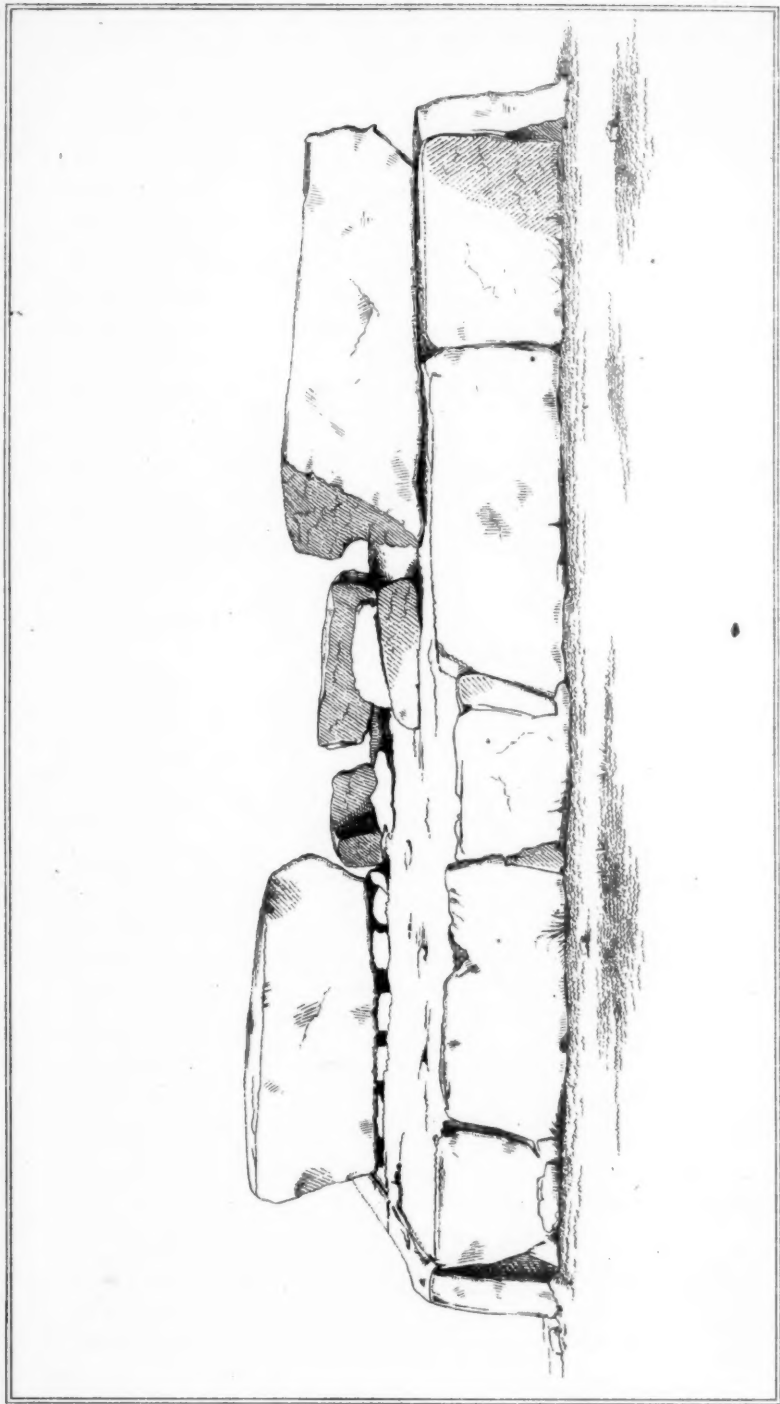
Akaanga, the slave of fearful Miru, mistress of the invisible world, infallibly catches all these unhappy spirits in his net and laves them to and fro in a lake. In these waters the captive ghosts exhaust themselves by wriggling about like fishes, in the vain hope of escape. The net is pulled up and the half-drowned spirits enter the presence of dread Miru, who is ugliness personified.

The secret of Miru's power over her intended victims is the "kava" root (*Piper mythisticum*). A bowl of this drink is prepared for each visitor to the shades by her four lovely daughters. Stupefied with the draught, the unresisting victims are borne off to a mighty oven and cooked. Miru, her peerless daughters, her dance-loving son, and the attendants subsist exclusively on human spirits, decoyed to nether-world, and then cooked. The drinking cups of Miru are the skulls of her victims. She is called in song "Miru-the-Ruddy," because her cheeks ever glow with the heat of the oven where her captives are cooked.

Such was believed to be the inevitable fate of cowards and of all who died a natural death. But a nobler fate awaited warrior spirits, whether male or female. Their home was the warrior's paradise in the heavens. Winter was believed to be occasioned by the chilly touch of disembodied spirits. During the rainy season they cannot rise to this felicity; but when in the month of August the coral tree is in blossom (the blood-red colour of the flowers being symbolical of their own blood spilt in war), they prepare for their departure. When all is ready, *i.e.* when all the warrior-ghosts are assembled at the edge of the cliff overlooking the marae of the war-god Rongo, still facing the setting sun, there suddenly springs up at their feet a mountain, up which they climb. The road upwards is built of the clubs, spears, and stones with which they were slain. Arrived at the summit they leap into the azure expanse, where they float as *specks*. Hence this elysium of the brave is often called *Speckland*. These fortunate spirits look down with ineffable disgust upon the wretches in Avaiki. They are covered with garlands of sweet-scented flowers, and spend their time in dancing the war dance and in reciting, over and over again, the brave deeds performed in life.

The inevitable result of this belief was to foster an utter contempt for violent death. Many anecdotes are related of aged warriors, scarcely able to hold a spear, insisting on being led to the field of battle, in the hope of gaining the home of the





TOMB. ROTUMAH.

C.F. Hall Lith. London, E.C.

brave. Like ourselves, the natives of Mangaia despised bush fighting.

The heaven of the natives of Aitutaki consisted in a land where Tukaitaua unceasingly feeds his friends on the finest sugarcane, which they, with unalloyed appetites, chew *ad aeternum*. Their hell was located in the domains of Miru, who compels all visitors to swallow a bowl of living centipedes! In the agony of pain which succeeds, the poor wretches drown themselves, and are afterwards cooked and eaten by the hag Miru and her companions.

I have just learned, with much interest, that the inhabitants of Port Moresby, in New Guinea, place their elysium in a mythical region named *Erema*, lying towards the setting sun, far beyond Cape Suckling, the last bold promontory towards the S.W. *Erema* is covered with sago-palms, and good spirits are permitted to eat sago without stint or cessation. But, unlike the South Sea Islanders, the natives of the S.E. peninsula of New Guinea believe that eventually the spirit returns to its ancient haunts to inhabit some other human body.

Mr. Brabrook read a communication by Mr. W. W. Wood, "On the Tombs in the Island of Rotumah."

On reading Lieutenant Oliver's paper on "The Megalithic Structures of the Channel Islands," I bethought me of some notes and sketches made years ago on the Island of Rotumah, in the South Pacific Ocean, where I met with some curious stone tombs, composed of masses so large that it was difficult to conceive the means by which the natives had been able to move and arrange them. The Island of Rotumah is an outlier of the Fiji group, though at a considerable distance to the north. The natives are of a different race and lighter colour than those of the Fiji's, and are distinguished (or were) for their amiable and inoffensive manners. The island is a small one, and not very high, except towards one end, where there is a precipice overlooking the sea, with a large flat terrace at its base, overflowed at high tide. At a short distance is a very remarkable object—a small island composed of an immense rock, which, by some great convulsion, has been split nearly in the middle, leaving a passage through which the sea flows and boats pass in fine weather. About half-way up the chasm is an enormous rounded rock, which is jammed in between the two nearly vertical sides of the passage and hangs thus suspended. From a certain point the sides of the rock appear quite or very nearly vertical, and the appearance of this great mass of stone, hung

as it were, by two points of contact over the passage, is most singular, as will be seen by the accompanying sketch.

The megalithic monuments on the principal island were not far from the beach, near some very fine old trees. The tombs consisted of a low platform of earth, enclosed by slabs of stone set vertically, and in the centre one or more huge stones of irregular shape—mere masses of rock—some of which must weigh many tons. The natives seemed shy of giving any information respecting these curious structures, and from a European, who had settled on the island, we could only learn that they were tombs. The remarkable point was that these simple people should, without the aid of machinery, have been able to raise and arrange these great masses of rock. I took no measurements, fearful of alarming the prejudices of a superstitious people, but in the sketch is introduced a human figure as a standard of comparison (Plate xxii.).

The Island of Rotumah is seldom visited except by whalers, and I do not remember to have seen any account of these curious burial places in any narrative of voyages. As the relics of the ancient religions and customs of most of the islands of the Pacific are fast disappearing, it may be worth while to preserve the memory of them for the benefit of future historians of these races. The builders of the colonnades of the Island of *Tinian* are forgotten, and we know little respecting the sculptors of the curious statues of the Island of Ascension.*

DISCUSSION.

A discussion on the foregoing papers then took place, in which Professor T. McHUGHES, Professor ROLLESTON, Mr. EVANS, Mr. HYDE CLARKE, Mr. BURKE, the PRESIDENT, and others took part.

Mr. GILL, in reply, said—I have spent about twenty-two years in the Hervey group, in the South Pacific. Shut out to a great extent from the civilised world, I enjoyed great facilities for studying the natives themselves and their traditions. I found that they had two sets of traditions and songs—one referring to their gods (of these you have heard a specimen this evening) and to the supposed experiences of men after death; another relating veritable history. In such researches we cannot be too careful to distinguish history from myth. But when we find hostile clans in their epics giving substantially the same account of the past, the most sceptical must yield to the force of evidence. The result of my researches is the

* Mr. C. F. Wood, who has spent several months on the island, which is throughout its whole extent broken up by hills, not to say mountains of volcanic origin, considers that the tombs mentioned by Mr. W. W. Wood are dolmens, and they are to be found all over the island, even in parts not now inhabited. The same form of tomb is still in vogue, but built up of small stones.

belief that the Hervey Islands have been inhabited not more than six centuries. 1. As to queen island of the group, *Rarotonga*, a celebrated chief, Makea-Karika, sailed from Manuâ, the most easterly portion of the Samoan group, and first discovered and settled on Rarotonga, so named in memory of "Western Tonga." Eight times did this daring voyager traverse the ocean, the last time to return no more. It is believed that he perished in a storm. But the colony he founded prospered under the rule of his son. This is well known at Manuâ as well as at Rarotonga. When the missionary Williams discovered Rarotonga in 1823, the 24th Makea was king of the island, or, as it is still called, "the Tongan kingdom." "Makea" is a title of office, like "Pharoah" and "Candace." Allowing to each a reign of twenty-five years, we attain a total of 600 years; but from what one knows of savage life twenty-five years is too long a period. There is on Rarotonga a lesser chief, Tinomana, likewise descended from Makea-Karika. For nine generations one chief ruled the island in peace; in the tenth generation the island was split into two hostile camps. In the year of the discovery of Rarotonga, the 19th in direct succession from Makea-Karika was then ruling over the lesser tribe. Allowing, as in the former instance, twenty-five years to each chief of the subordinate branch, we obtain a total of 475 years. 2. A hundred miles north of Mangaia is the island of *Atin*, which exercises sovereign authority over the lesser islands of Mitiaro and Mauke. Mana, the old chief and wise man of Atin, acknowledged that his ancestors sprang from the renowned Makea-Karika family. Being a younger branch, the oppressive law of primogeniture induced the first chief of Atin to seek a home elsewhere; so he called together his vassals and departed to the comparatively barren isle, still in possession of his descendants. 3. With regard to the history of *Mangaia*, a great difficulty in settling the question arises, from the fact that those restless, fierce islanders were no respectors of kings. Most of their royal personages were, from time to time, murdered by their subjects at the instigation of the priests. These crafty fellows well knew that their own persons were generally safe on account of their ghostly functions. We turn, then, from the list of kings—in which there are numerous *interregna*—to the well-known succession of priests of the three principal gods of Mangaia. This gives us only *nine* very long lives; or, to speak with absolute correctness, seven *very* long lives and two shorter ones (of murdered priests). Allowing each priest to discharge his functions during the long period of fifty years, we get a result of 450 years. That the traditions of the Hervey islanders are of real historical value is shown by a circumstance which took place during my residence. The old men of Rarotonga often said in my hearing, that whenever a certain venerable tree, named Tuarea, should fall, underneath would be found "the seat of Tau," one of the original settlers from Samoa. In 1867 this aged tree fell with a tremendous crash on a still day; underneath, imbedded in the trunk, was the stone seat of Tau! It seems that when the island was first settled a young *callophyllum inophyllum*

was planted in a marae near the stone seat of this lesser chief, and in time overgrew and covered it. The whole subject is full of interest, and deserves an exhaustive treatment.

After some remarks from Mr. PARK HARRISON and the PRESIDENT, the meeting separated.

FEBRUARY 22ND, 1876.

J. PARK HARRISON, Esq., M.A., *Treasurer, in the Chair.*

The minutes of the previous meeting were read and confirmed.

The election of the following members was announced:—
HENRY BLENCOWE CHURCHILL, 2, Raymond Buildings, W.C.;
EDWARD F. STEVENS, F.S.A., Trustee and Honorary Curator of the Blackmore Museum.

The following list of presents was read, and thanks ordered to be returned to the respective donors:—

FOR THE LIBRARY.

From the SOCIETY.—Schriften der Physikalisch—Ökonomischen Gesellschaft Zu Königsberg, 1873-4.

From the BERLIN ANTHROPOLOGICAL SOCIETY.—Zeitschrift für Ethnologie. No. 5, 1875.

From Prof. F. V. HAYDEN.—Bulletin of the U.S. Geological Survey of Territories. No. 5. Miscellaneous Publications, do. No. 5.

From the EDITOR.—Archiv für Anthropologie Achter Band. No. 6.

From the AUTHOR.—Notes on Early Social Grades in England. By J. Boulton.

From the EDITOR.—Revue Scientifique. Nos. 33 and 34, 1876.

From the EDITOR.—Materiaux pour l'Histoire de l'Homme. Jan., 1876.

From the HUNGARIAN ACADEMY OF SCIENCE.—Monumenta Hungariæ Archæologica, iii. Kötet, 1 Resz.; Archæologiai Közlemények, ix. Kötet, 11 fuzet; A. M. T. Akadémia E'vkönyvei, xiv. Kötet, 2-6 Darab; Monumenta Hungariæ Historica, xviii.-xxiv. Kötet, Okmánytára; Do., Kötet 22, 24, 27, and 31, I'rók; 11 Rákóczi Ferencz Levéltára, 1 Osz., 2-4 Kötet; Do., 11 Kötet; Történelmi Tar xix.-xxi.; Történelmi Emlékek, ix. Kötet; Repertoriuma, Első Osztaly I.; Értekezések a Történeti Tudományok Kőrebol. Kötet 2-5, 1873-5. Ertesitoje, 1873-5; Nev-es largymutato, 1867-74; Almanach, 1874-5; Général Catalogue.

From the EDITOR.—Nature (to date).

The following paper was read by Mr. Brabrook in the absence of the author:—

On the ETHNOGRAPHY of SCOTLAND. By Rev. JOHN EARLE, M.A.

1. It is a common remark that the Scotch and the Norwegians are very much alike. As I write, I have at my side a sixpenny periodical, in which a recent traveller in Norway dilates on this likeness through nearly two columns of print. I remember quite enough of my own first impressions in Norway to profess myself a sharer in this popular opinion. If I were to imagine an ideal Scotchman, tall, fair, square, open, fresh, friendly, cautious, inquiring, practical—though I have seen many such in Scotland, and, indeed, one in particular presents himself now before my mind—yet I think I should give this candidate the second place, and find my *beau idéal* in the person of a gentleman of the name of Vetlesen, in whose house I was an inmate while I sojourned at Christiania. So much by way of preliminary, that the passing observer sees, or fancies he sees, a family likeness between the Scotch and the Norwegians.

Popular impressions of this sort are little regarded unless they find support in scientific judgment, but when they do find such support they repay it well, by the confirmation they afford to the conclusions of science. In the course of certain philosophical studies, to which I shall recur by-and-by, I was led to think more than I had ever before done of this old comparison between these two nations, and to feel a strong curiosity to know the opinion of the best ethnologists as to whether there was anything in this popular opinion or not. In this attitude of mind I had recourse to my friend Dr. Beddoe, and asked him the question, and he, without hesitation, said he thought there was more than superficial ground for it, and he invited me to his house to see some Norwegian photographs. The consequence of that invitation was that I saw a fine set of portraits, taken by the eminent artist Tidemand, and selected by him as specimens of the chief types of physiognomy in the neighbourhood of Bergen. Dr. Beddoe considered that he could match almost every one of them in Scotland, and I, with my smaller experience, was able to follow and verify most of his observations. But much as these characteristic portraits offered to confirm the opinion which I was testing, it was the firm hold which I perceived it had on the experienced mind of Dr. Beddoe that made me think it worth my while to collect and arrange the evidence which had revived my interest in the subject.

2. Leaving now the aspect of the people and turning to the page of history, we find a current of migration which adds

strength to the foregoing observations. Dr. Rolleston* has remarked that where we find a line of active migration in historic times, the presumption is that it was in action also in the previous period, of which we have no record. Now we can confidently say that for several centuries after we begin to have records of the relations between the coasts of Scotland and those of Norway, the evidence of history is uniform in its representation of a tide of adventure and colonisation and conquest from the shores of Scandinavia to the shores of Britain. Our earliest records of this movement are of the eighth and ninth centuries. How much earlier it may have been in action, and with what volume, we cannot say. But the ninth century appears as its period of greatest activity, the period known as the age of the Vikings (*Vikinga—Öld*): the century of the Danish settlements in England and of the *Norsk* settlements in Iceland. A Saga tells of a conquest of more than half of Scotland by Norsemen, but it may be that Scottish historians are right in treating this as the language of exaggeration. Still, in an estimate of the value of such a statement, we must bear in mind that it is found, not in one of the romancing Sagas, but in one that is in its purport as documentary as our Domesday—the *Landnáma-bók*, or Book of the Colonisation and Land Settlement of Iceland. The *Landnáma-bók* was written by Ari Fródi (born 1067, died 1148), an historian who certainly cannot be said to have been beyond the reach of those motives which lead to exaggeration, seeing that he was descended from those very kings that conquered in Ireland and Scotland; but, on the other hand, he owed the loyalty of truth to his family records; and the force of this noble literary sentiment in the Iceland of the eleventh century was far greater than we might be disposed beforehand to imagine. He narrates that King Olaf the White conquered Dublin and Ireland; and that his son, Thorstein the Red, in alliance with Sigurd, first Earl of the Orkneys, conquered Caithness, Sutherland, Ross, and Moray, and more than the half of Scotland, over which Thorstein then ruled as king, until he was betrayed and slain by the Scots. In the more ordinary Saga-literature, that is to say in the story-telling Sagas, there is an expression of frequent occurrence, which seems to carry evidence of great value for our present inquiry. When the scene of the narrative is in the old mother country of Norway, as it often is in the Sagas, and when a man has got himself into trouble, or difficulty, or danger, so that whether for fear of the law, or for dread of an angry neighbour, he feels unsafe in his own home-

* President of the Anthropological Department at Bristol.

stead, the natural way of escape is to "harry west." Again, when a Norwegian was weary of the routine of agricultural life, and he wanted a little change and excitement, he would fit out a ship, take a season on the sea, and he also would be said to "harry west." This expression indicates a state of relations between the coasts of Scandinavia and those of Britain. That would appear to have been remarkably constant. And the results of this long-continued relationship are permanently established, and open to observation in the present day.

The following example is drawn from a comparison of Lincolnshire with Denmark, and we know that these two countries stand in a geographical relation to each other like that of Scotland to Norway. The coast of Lincolnshire is due west from the coast of Denmark, and there is in this latitude a remarkable identity of character observable between the populations of the opposite sides of the German Ocean. From the ninth and tenth centuries down to the present day that identity has continued to display itself. In the ninth and tenth centuries those place-names ending in *by* and *thorpe* were set which are so numerous identical with the Danish names in *by* and *thorp*. In the present year a friend of mine, a native of North Lincolnshire, was travelling in Denmark, and he wrote home to a relative in North Lincolnshire, saying, that when he was on the boat between Kiel and Copenhagen he could have fancied himself on the Trent steamer from Gainsborough to Hull; so identical were the aspect of the people and the general accents of the conversation.

With such a fact as this before us, we might take it as a probable inference of analogy that the children of the Norwegian fiords were very conversant with the coasts of Scotland, an inference which is both illustrated and corroborated by that significant expression of "harrying west." But we are not in this matter reduced to mere inference. We possess a recorded notice of the fact, and that in a tenth century chronicle, of the highest quality. In the Saxon chronicle (A), under the year 924, the population of Northumbria is classified in a remarkable passage. And here let me note that by Northumbria in the tenth century was meant the whole stretch of country from the Humber to the Forth. These are the words of the earliest of our native chronicles, the Saxon Chronicle of Winchester:—*Ealle pa pe on Norp hymbrum bugeap, ægger ge Englice, ge Denisce, ge Norpmen, ge opre. In modern English—All those that dwell in Northumbria, whether Anglian, or Danish, or Northmen, or others.* And although this quotation does not expressly state that Northmen were settled upon any part of that area which we now call Scotland, yet it must be admitted that if there were Norsk settlements further south, the probability of

such settlements to the north is a reasonable *à fortiori* inference. In the Western Isles we know that the Scandinavian population obliterated all trace of any other, and that the whole of the western coast, down south so far as Cumberland, bears traces of Norwegian occupation. And the influence of this neighbourhood was not resisted by the Gaelic population, for we are told by Mr. Burton* that a strong infusion of Norsk superstition had found its way among the Celtic-speaking Highlanders. If there is any part of the coast of Scotland which our evidence seems manifestly to touch it is the eastern coast, and in respect of this we may fall back upon that apparently old, because proverbially established Norwegian habit of "harrying west," and interpret it in the light of our President's remark, which I appealed to before, namely, that the path of historic invasion indicates with the highest probability the line of such migrations and invasions as took place before the historical period.

For considerable though the evidence of history is as to the influx of Norwegians into Scotland, we still feel ourselves urged to extend that evidence still further by analogy, and to carry it to its utmost legitimate stretch, when we look either at the physical aspect and family likeness, of which we have already spoken, or at the strongly characterised national language of the people of Scotland, to which, as to the more special material of this communication, I now proceed.

3. It has often provoked the curiosity of the philologist to know what was the source of the peculiarities of the Scottish language. For a long time it seemed enough to say that the Lowland Scottish had received its stamp from the dialect of the Angles, of which it is the descendant and the modern representative. But the more we become able, in the progress of philology, to form a definite estimate of what the Anglian dialect really was, the more inadequate does this explanation appear, as far as regards the salient characteristics of the Lowland Scots. If we look towards the Gaelic on the mountain sides, this may, and does, supply an elucidation here and there, but it offers no stream of influence such as is needful for the purpose of our inquiry. It had indeed been suggested that the true source was Scandinavia, and I imagine that Dr. Dasent may have been the first to advance this opinion; at any rate it

* The passage is as follows:—"Many of the old Norse superstitions lingered in Scotland long after the established ascendancy of Christianity. They were the object of uninterrupted reprobation, first by the Romish, and next by the Reformation clergy. The General Assembly had to denounce them even in the eighteenth century, and they call forth many lamentations from the clergymen who compiled the two Statistical Accounts of Scotland. They have prevailed chiefly among the Celtic-speaking Highlanders."—John Hill Burton, "History of Scotland," vol. i. p. 245.

is with one of Dr. Dasent's writings that I associate my earliest appreciation of the importance of this suggestion. But now the publication of a thoroughly good Icelandic dictionary has removed the question from the realm of authority and has brought it within the sphere of that scientific induction which may be pursued by any reasonably qualified investigator.

Vigfusson's Icelandic Dictionary has supplied the material to prove that the striking features of the Scottish language are neither more nor less than pure Norsk. And here I wish to be exactly understood. I am not engaged in an examination of the broad foundations of the Lowland Scots' dialect, but in the salient and striking features of it, and when I say "striking," I mean such words or forms as specially arrest the attention of the Englishman. This therefore leaves untouched whatever English has in common with Scotch, whether from the original sisterhood of the immigrating tribes in the fifth century, or from their common obligations to the Scandinavian source. Although the English language has drawn much from her Scandinavian settlements, yet the Danism of the Scotch is so much greater that almost every one of those expressions which we call distinctively Scottish will be found to be more or less open to the suspicion of Danish influence. The following list of examples will be sufficient to illustrate my meaning:—

bairn	ken
big (=build)	lax
carline (=old hag)	sackless
eldin (=fuel, firing)	spaeman
ettle	spaewoman
fey (=do, make)	speer (=ask)
gar	wadset (=mortgage)
greet (=weep)	

I would not claim for these examples a greater weight of evidence than strictly belongs to them. It is quite certain that a good many words may pass from one language into another without involving any hint of relationship between nations. We are quite unconnected with all the Arabic-speaking nations, and yet we have a list of good and distinct Arabic words in our language. Such are admiral, alchemy, alcohol, alcove, algebra, alkali, almanac, barbican, cypher, elixir, magazine, nadir, orange, zenith. The fact is that when we apply the philological argument in ethnological reasoning we must learn to make distinctions between sorts and qualities of words, and even to graduate them upon a scale of relative estimation. If we consider these Arabic words one by one we shall easily recognise that they are words that were for the most part

closely associated with objects of wide and common interest in science, art, learning, invention, discovery, commerce; that with the transport of such things the names also were transported; and that in this way words can pass through one or more intermediate language and get planted in a remoter language which lies beyond all chance of contact with the original source of the movement. The Scottish words which I have given above are not of this sort; not words likely to have travelled in any such a manner, though they two are very various in the weight of evidence which they severally impart. The weightiest among them are these—eldin, ettle, gar, greet, ken, lax, spaeman. Of these I will select one only for comment. The Teutonic languages have two words for action, namely, *do* and *make*, German *thun* and *machen*; but neither of these words are known, or ever have been known, in Scandinavia. Instead of these two the Scandinavians have one word only, which in Icelandic is *göra*, in Swedish the same, in Danish *gjøre*, and this word it is which has been transplanted into Scotland, and which has there taken the form *gar*. Now my observation is, that this word lies very close to man, to human life; that it is not so likely as the Arabic words above to be carried with a new treatise or a cargo of goods to a new country, or to filtrate through intervening nations and get adopted by a strange nation beyond—in a word, that nothing but a manifold intermixture with Scandinavians could have made the Scotch adopt such a word as *gar*. And when we consider that the original vernacular of the Lowlands possessed both of the verbs *do* and *make*, in the enjoyment of which they really could not be much in want of a third of the same general signification, we find a difficulty in comprehending how *gar* could ever have got so stubbornly rooted as it is, without supposing at some time a very great and almost a preponderating population of Northmen, not, of course, in every part, but in those parts that proved to be of influence in the setting of the national speech.

The next stage of our evidence shall be the Scandinavian elements in the local names of Scotland. In the whole area of the kingdom of Scotland there are to the English eye two groups of strange names, one absolutely alien, namely, the keltic, the other kindred, though strange; and these are Norwegian. These latter are so generally admitted to be of Scandinavian origin, that a mere glance at this part of the subject may be thought sufficient. Such terms as *dale*, *fell*, *firth*, *gate* (in the sense of street), *gill*, *haugh*, as in Maxwellhaugh. These and some others are too well known to require enforcement. And if I add a few more remarks on this point, it is

not so much for the sake of strengthening the philological argument as for the light which it reflects upon the history of the Norsk settlements, and the proof it affords that Scotland is almost fringed around with their traces. The names hitherto mentioned are all at home in the South of Scotland. If now we look at the north, Caithness is a Norsk compound. The Icelandic form is *Kata-nes*, and it means ship-promontory. And in Caithness we meet with that strong mark of the presence of Norsemen, a river-name ending in *á*, namely, *Brora*. The name of Sutherland (southernland) is hardly likely to have been so called by any but Norsemen, for it has nothing north of it on the mainland except Caithness, and therefore it appears from its very signification to have been dictated by strangers; but, in addition to this, the form itself is pure Norsk, viz.: *Sudrland*.

The same northern standpoint is manifest in the Norsk name for the Hebrides, which, from a Scottish point of view, were, and still are, called the Western Isles, but which the Northmen called the Southern Islands—*Sudr-eyjar*, and this Norsk name still lives in our ecclesiastical nomenclature in the title of Soder and Man.

Hitherto our evidence has been limited to one sort of words, of various quality indeed as to the force of their evidence, but still all belonging to that coarser and more material-bound division, which we may call by the common name of presentives. These examples, it is true, when considered together with what we know of the historical movements, and, further, with what has been observed of the family likeness, might be thought sufficient to build up an argument of strong probability as to the fusion of the native Anglian metal with no little of the Norwegian iron. But at this stage the argument is so far from being complete, that, had I no more to offer, I should hardly have felt myself justified in asking you to favour me with your patient attention. I have, however, a more important set of facts to submit than any hitherto noticed.

But before explaining, I would ask leave to quit the subject for a moment while I advert to our own English language, in order to fetch therefrom a sort of preparatory illustration. It has already been said that English is itself deeply tinctured with the Danish, and that this Danish is substantially the same language as the Norsk, which is found to have left so many traces in the Scotch. Suppose now we were challenged to prove that there is much Danish in the English language! It would be very easy to produce a list of words, such as *ale*, *bridal*, *call*, *dream*, *egg*, *fellow*, *gain*, *hunting*, *ill*, *knife*, *law*, *meek*, *ransack*, *sky*, *take*, *ugly*, *window*. We might muster three or four times

as many as these, and a very pretty study it would make to hunt them up and detect the proofs—on the one hand, proofs affirmative that they are Danish, and on the other hand, proofs negative that they are not Saxon. Thus, ale is the Danish for the Saxon beer, and bridal means the bride's ale, or banquet. The word ill is Danish, where the Saxon form is evil. So again, sky is the Danish for heaven. The next word, take, has so prevailed that it has left no room for its old Saxon rival and equivalent—*niman* (German *nehmen*), but the native echo of it lingers in Shakspeare in the name of Corporal Nim. Suppose now we could, with equal clearness, circumstantiate some fifty or sixty Danish words in use among us, what would be the force of their accumulated evidence as compared with this one little, and, perhaps, at first glance insignificant-looking fact, namely, that we received ARE from the Danes? In whatever degree this fact appears despicable, in that very degree it is important. It is precisely the insignificance of the thing that constitutes its evidential value. It is very easy to catch from foreigners a number of outside words, like those Arabic ones above. It requires a nearer intercourse to catch words like call, dream, fellow, gain, law, ransack, sky, take; yet a hundred such as these weigh little in comparison of that silent and unnoticed change, by which we came gradually to drop saying *they be* and to take up the habit of saying *they are*. In general terms the truth is this, that symbolics are far slower of communication than presentives; or, in other words, they demand a far more intimate, proved, and multiplied intercourse. Time will not permit me to reason out this proposition. I must trust that it will explain itself to every hearer who is sufficiently interested to reflect upon it. And with this preparatory illustration, drawn from the relations of the English to the Danish, I return to my proper subject, the national language of Scotland.

This language is saturated with Norwegian symbolics to the very core, and as it is to such words, more than to any of those yet enumerated, that it owes its own peculiar idyllic beauty, so also is it from the presence of such words that the philologist will draw his surest conclusions about the Scandinavian relationship of the sister nation. One of the most prominent examples is the auxiliary *maun*, which variably corresponds to our *shall*, or *will*, or *must*. Thus, "I maun gang"—"ye maun do it." This is the Icelandic MVNU, under which word Mr. Vigfusson has this remark: "Hardly any verb is more frequent."

From an auxiliary which is quite strange to the English language I pass to one which we share with the Scotch, both nations having borrowed it from the Norse, and having applied

it to use severally in their own fashion; and this diversity of application (let us note in passing) helps to prove the foreign character of the original. I speak of the auxiliary *get*, and I will quote two examples which are distinctively Scottish—"Ye'll get that"—"I will come and meet you if I can get." The manner in which this auxiliary is used in England is so perfectly distinct, that the Scottish use of it is one of the things that piques the curiosity of the English traveller.* The next instance shall be a very remarkable preposition, namely, *til*. The Scottish peasant says, "*til* Glasgy," "*til* Eddenburry," just as the Norse peasant says, "*til* Bergen." And here let me note (as above) that while this word has made its way also into English, our English uses of it are quite a different set from the Scottish ones, a phenomenon not to be expected if the word had been a common ancestral heritage, and only to be expected if the word had been separately admitted from a foreign source.

I have yet to speak of one very delicate and intimate result of the admixture of the Norwegian with the other races that have contributed to form the Scottish nation. Where the Scotch has the same words as the English, but those words differing in sound, with a peculiar vocalisation, the Scottish vocalisation will be found in a considerable proportion of instances to be Norwegian. Thus *mair* (for *more*) is just the same sound as the Icelandic *meir*; *ane* (for *one*), as the Icelandic *ein*; *stane* (for *stone*), as Icelandic *stein*. As the word *louper*, in "*landlouper*," differs from our *leaper*, so does the Icelandic *hlanpa* (to leap) differ from the Saxon *hleapan*. The Scotch say *nowt* for *neat*, cattle, and this is the Icelandic *naut*.†

The examples which I have given will prove, I think, to be typical examples; and there are more of them to be found by the patience of the inquirer, with the valuable help of Mr. Vigfusson's dictionary.

4. I have now only to gather up the results. Our Danish and Norse districts are characterised as the meeting ground of the two great and long divergent branches of the Gothic family, the Teutonic and the Scandinavian. From East Anglia, up our eastern coast to its northern extremity, the Scandinavian traces are still to be found nearly all the way; and from that northern extremity, down by the west through the Hebrides to the Lake District, there is a continuous fringe of northern

* For a proof of this, see *Quarterly Review*, No. 278, October, 1875, p. 443.

† I know but of one similar case in the English language. The Saxon *swodn*, swineherd, is now represented by the form *swain*, which is not the natural modification of *swodn*, but must have been influenced by the Danish analogue *svæinn*.

settlements, and the Norsk race must have touched, and even penetrated, at almost every point, having made more lasting impressions, however, and having occupied a deeper margin of territory in some parts than in others. The irregular and broken area thus vaguely adumbrated may well be compacted by the ethnological thought, that this is the area wherein the supervention of the Scandinavian upon the Teutonic occupation give rise to a new type of physiognomy, of character, of language, and of poetry.*

It is this superposition of a Scandinavian upon a Teutonic population that constitutes the general ethnological basis throughout all this irregular length of coast, always excepting the Gaelic part of the west of Scotland. But similar as is the population of these districts, in so far as Scandinavians have everywhere mingled with an Anglian population, yet the subsequent fortunes of the intrusive language has been very different in the districts north of the Tweed from that it has been on the south. The political boundary line between England and Scotland has had a great linguistic effect. It is not too much to say that the existence of the Scottish language is due to this political separation. In the southern part of the island the continual interchange of communication between the Danish and the Saxon districts ended in the dilution of the former and its inclusion as a modifying element, not always easy to trace in the modern English, which sprang into being from the multi-form congeries of the Frenchified Saxon dialects.

Localities there are in England which still retain the very forms of the original Scandinavian deposit, and pre-eminent among these is Cleveland, whose dialect has been admirably delineated by Mr. Atkinson. But as a general rule the Danish has been dispersed with a stimulating and quickening effect throughout all the parts and members of the English language, and being present like an infusion rather than in palpable

* Something and, perhaps, much of the peculiar flavour of English poetry, that quality which distinguishes it, and which is gaining for it the appreciation of foreigners, is to be traced to our Scandinavian districts. The best of the English ballads, the minstrelsy of the Scottish Border, the lyrical and pastoral poetry of Scotland, are all of one type, and that type one that has silently modified the poetry of England. The occasional touches of northern diction in our greatest poets are indications of their northward debt. In the discussion which ensued on the present occasion, Sir Walter Elliot called attention to the northern expressions in Spenser, and he quoted the line,

"Tell me, good Hobbinall, what garres thee greet."

From Shakspeare we may quote the northern *til*:—

"The nightingale, as all forlorne,
Leaned her brest up til a thorne."

substance, it often requires almost a chemical analysis to detect it.

In bold contrast with all this is the state of things in the Scottish language. There the Norsk element shows itself substantial and undiluted, and it has taken possession, not only of the high places of the language, as Latin and Greek have done in modern English, but it has even made its way into the recesses of the structure and tinged the vocalism of the words in a manner, not indeed equal in degree, nor yet even quite the same in kind, but nevertheless in a manner which recalls and admits of comparison with the deep and intimate association of the French with the Saxon in the production of the English language.

The opportunity for bringing such a formation as the Scottish language to a state of maturity was afforded by the protecting effect of the political boundary during the period when that language was in a state of growth, and by this means there has been garnered for scientific use an ethnological evidence which extends our view beyond the limits of recorded history and in the same direction; for the analysis of the Scotch language will assuredly be found to bring out more and more the proofs that it is the great and permanent memorial of the overlapping of the Teutonic and Scandinavian races.

DISCUSSION.

MR. WALHOUSE said—The word “gar” having been remarked on in the discussion, I may observe that in its sense of an enclosed space—gar, garth, yard—it is one of the most ancient and general of words, running through many languages from Persia to Scandinavia, and appearing in almost all old European dialects, *e.g.* Brit. Cornish, *gardd*, M. Goth, *gards*, a house; Polish, *grodz*, a stable; Franc., *gardo*, Old German and Frisian, *gaerd*, a garden; Swed. and Lapp., *gaerd*, *gaerde*, an enclosed space; Anglo-Sax., *geard*; Old English, *gherd*:

Sigh I thee not in the *gherd* with him?

Wiclif's New Testament, St. John xviii.

As a verb, signifying doing or carrying anything, it has a different root, and may possibly be connected with *kar*, a derivative from the Sanskrit root *kri*, to cause or do, whence *karma*, *kartta*, factum, factus, &c.; a root permeating all Indo-European languages, and appearing, Borrow thinks, in monger, in such words as costermonger, ironmonger, &c.

MR. J. P. HARRISON said that Mr. Earle's views attracted a good deal of attention, and were received with considerable favour when the paper was read last year at Bristol. He had himself long considered that the patronymic *son* in Scotland, and more especially in the shires bordering on the Frith of Forth, indicated

Danish descent. He alluded to names like Paterson, Anderson, Nelson, Jameson, &c. It was so, notably, in Lancashire and other Danish counties, whilst purely Saxon and Anglian names were rare. The converse was the case in the south. In the home counties, however, the movements in the population have introduced great changes.

After some remarks from Mr. HOWORTH, Professor HUGHES, Mr. LUKE BURKE, Mr. JEREMIAH, and Dr. SPRATT, the meeting separated.

The following Notes on the Human and Animal Remains found at Cissbury were, in substance, read by Professor ROLLESTON at the meeting on November 23, 1875 (Journal, vol. v. Part iii.), but their publication was unavoidably postponed to the present occasion.

NOTE on the ANIMAL REMAINS found at CISSBURY. By Professor ROLLESTON, M.D., F.R.S.

THE most surprising, though by no means the most important result of the examination of the animal remains found in the excavations at Cissbury was the demonstration of the existence amongst them of the bones of the wild ox, *Bos primigenius*, and the wild boar, *Sus scrofa v. ferus*. It is true that we have abundant evidence from the consilient utterances of poets, historians, and naturalists, from the names of men and of places, and from other quarters also,* for showing that these wild animals persisted into quite recent historical times. Still, for all that, it has been at least rare to find their bones in any prehistoric excavation. I had never been so fortunate as to meet with any such remains so placed till my experiences at Cissbury. It had never seemed difficult to me to account for this absence, the presence of the remains of domestic animals sufficiently explaining it on the principle of "least action," a principle which commends itself as much to savage as to sage. Hence, when I was told that in the pits excavated at Cissbury by the late Mr. Tyndall, of Brighton, the bones of *Bos primigenius* had been found in considerable quantities, as also those of *Sus scrofa v. ferus*, I felt and expressed a great anxiety to see them. This wish was gratified and my scepticism removed by the kindness of my friend Mr. Ballard, of Broadwater, who presented me with the bones now to be described as having come from Mr. Tyndall's pit (see p. 364 of "Journal of the Anthropological Institute," Jan. 1876, fig. 1, k, Plate xiv.).

* See Dr. J. A. Smith, "Proc. Soc. Ant. Scot.," 1871—72, ix, p. 667.

I. Remains from Mr. Tyndall's Pit.

1. Distal end of left humerus of *Bos primigenius*, with some marks of burning upon it. This fragment consists of the condyles and so much of the shaft as to bring it up to a length of 7.7 in. Its large proportions are the first point which strikes the eye, bringing to mind Cæsar's words as to the urus of his day, *magnitudine paullo infra elephantos*. Its brightish, glazed appearance comes secondly under notice; and, thirdly, the sharp definition of its angles, and processes, and articular surfaces. Looking at it a little more closely, we see a beautiful polygonal reticulation standing out upon the bone, over the surface which gave origin to the lowest fibres of the brachialis anticus. Just such an appearance is presented by the neural arch of the third cervical vertebra of *Bos primigenius* figured by Rütimeyer, Tab. iii. fig. 3 of his "Fauna der Pfahlbauten," and commented upon by him at pp. 15 and 72 of the same work. They are to be seen, but only in a rudimentary form, in the humerus of a fine Chillingham bull lately presented to the Oxford University Museum by the Earl of Tankerville, immediately above what, in man, would be called the coronoid fossa. The thickness of the cylindrical wall of the humerus is 20 millimeters. The extreme width at the condyles is 120 mill., as against 83 in the Chillingham bull. The circumference, taken at a tangent to the apex of the facet for the head of the radius, is in the Cissbury bull 200 mill., as against 139 mill. in the Chillingham bull.

2. The measurements of an ungual phalanx from a fore-foot of the Cissbury bull illustrate the axiom *ex pede Herculem*, and will show anyone who will construct a couple of triangles with the subjoined two sets of dimensions how greatly the ancient wild bull exceeded in size what Rütimeyer holds to be its modern representative.

Fore ungual phalanx.	Cissbury Bos.	Chillingham Bos.
	Mill.	Mill.
Extreme length along inferior edge ..	90	72
Extreme length along upper edge ..	70	53
Height	64	48

3. Fragment of tibia, proximal end, *Bos primigenius*. Thickness of cylinder of bone, exclusive of spongy diploë, 15 millimeters.

4. Fragment of femur, proximal end, *Bos primigenius*. Thickness as above, 14 mill.

5. Two fragments of frontal bone of *Bos primigenius*, with strikingly glistening and dense textured walls to frontal sinuses.

6. Fragment of rib of *Bos primigenius*. Its extreme depth is 53 millimeters, as against 45 mill. in the Chillingham bull.

7. Upper molar teeth, *Bos primigenius*.

8. Part of lower jaw of wild boar, *Sus scrofa v. ferus*, with second and third molars *in situ*, and the last just come into use. The bright glazed appearance characteristic of the wild variety of *Sus scrofa* is well marked on the outer, but eminently well on the inner, surfaces of the walls of the jaw.

Very many more bones than these were procured by Mr. Tyndall from his pit at Cissbury. His lamented death has, I believe, caused many of them to be irrecoverably lost. Those described are all that I have access to.

The presence of these wild animals in Mr. Tyndall's pit may be explained by the usually mistranslated* words of Julius Cæsar, "Comm. de Bello Gallico," vi. 28, when writing of the capture and slaughter of *Bos primigenius* by the Germans: "Hos studiose foveis captos interficiunt. Hoc se labore durant adolescentes," &c. These five latter words appear to me to mean that a good deal of trouble must have been taken and a good deal of risk run in getting the wild cattle to the pitfalls; merely butchering the animals after they had tumbled in would not harden a young man, at least in the sense in which Julius, one of the least cruel of a cruel people in a cruel age, would have wished to see a young man hardened. Hurdles of gorse probably were arranged on the principle of the wicker-hoops in a decoy, and it is easy to see how, by such a plan, eked out, perhaps, by the firing of heaps of the same useful material, a wild bull or a herd might be driven over a pitfall.

II. Remains from "Large Pit."

I come, in the second place, to the consideration of the animal remains found in the "Large Pit" marked *m* in fig. 1, Plate xiv.,

* For example, Canon Tristram, in his "Natural History of the Bible," 1867, p. 148, translates them thus: "The hunters are most careful to kill those which they take in pitfalls;" and the Rev. J. G. Wood, in his "Bible Animals," p. 128, renders them thus: "These, when trapped in pitfalls, the hunters diligently kill." Very little care or diligence would have been required for killing, though a very great deal would have been required for keeping alive, a wild ox which fell into such a pit as Mr. Tyndall's, thirty-nine feet deep. If the writers just quoted had recollected that in times previous to the invention of pumps it was a very common thing for "an ox or an ass to fall into a pit," not *studiose*, but *casu aut forte fortunâ*, they would have seen that the word *studiose* should be taken with "*captos*." So common, indeed, in those times, were such accidents, that Maimonides has written at great length about them in his treatise "De Damnis," a well-known work of great authority. Or if they had read a few lines more of Cæsar's in the same connection, they would have come upon the words "*Hæc (cornua) studiose conquisita*," which might have suggested a truer rendering. It is curious to note that Cuvier, "Oss. Foss.," iv. p. 113, 2nd Ed., omits the words in question altogether; and Gervais, "Zoologie et Palæontologie Française," p. 131, 1859, who would have done well had he followed Cuvier in some other matters, follows him in this implicitly. The really "learned" member for the City of Oxford, Sir Wm. Harcourt, drew my attention to the splendidly illustrated edition of

given in sections and plan in Plate xvii. of Colonel Lane Fox's paper in the number of this Journal for January, 1876, vol. v. No. 3, and described by him pp. 379-382, *loc. cit.* The entire number of bones from the large pit which I have before me for identification amounts, exclusively of a number of deer-horn implements described by Colonel Lane Fox, and exclusively of five molars of horse found lying superficially, to about thirty. Of this number, ten are fragments of bones of the domestic ox, *Bos longifrons*. Ten upper jaw molars from the same animal are likewise counted in it, and enable us to say that at least two individuals of this variety of *Bos* are represented in this collection; five are bones of the domestic pig, *Sus scrofa v. domest.*, and give proof of the presence of two individuals; one bone only testifies to the presence of the red deer, *Cervus elaphus*, so abundantly represented by its horns; the roe, *Cervus capreolus*, is represented by a piece of frontal bone carrying a nearly perfect horn, and also by a seventh cervical vertebra. A large part of the skull of a goat, *Capra hircus*, is labelled "Red seam, large pit, 9 ft. 6 in. beneath surface."

The first remark to be made about this collection of bones is that the smallness of their number is an argument in favour of the pit having been filled up very soon after it was first excavated. To this conclusion other considerations have been shown (see "Journal of Institute," *l.c.* pp. 381 and 386) to point. Eight bones of the thirty bear labels which show that they were found below the level of the "red seam," *i.e.* below the level to which the first "filling up" reached. These eight bones belong to the roe, the domestic ox, and the goat respectively. There is one bone, a nasal, which might have belonged to *Bos primigenius*,

the "Commentaries," published by Jacob Tonson, in 1712. On referring to it, I found M. Gervais' error anticipated, Caesar's description of *Bos urus* being illustrated by a magnificent, however misplaced, picture of a—Bison. Nor do I entirely agree with the translation given by Mr. Edward Lee (p. 13 of his charming little book, "Excavations at the Kesserloch," by Conrad Merk; translated by John Edward Lee. Longmans, 1876): "They (the natives) catch them in pitfalls made with great care, and then kill them." That great care was used in making and covering over the pitfalls I do not dispute, but great care, I am sure, must also have been used to secure that the animals ran over them. Julius says neither more nor less than that the *uri* are taken, with great trouble, by means of pitfalls and killed; and that the great trouble includes the riskful process of driving the herd, as well as the very safe one of digging the pit, the context seems to me to indicate. Hence I demur also to the free rendering given by Dr. J. A. Smith in the "Proceedings of the Society of Antiquaries of Scotland," ix. p. 593: "The man who killed the greatest number of them, *even by the pitfall*, brings the horns as an evidence of his prowess, and is highly applauded by his countrymen,"—though this interpretation, like Mr. Lee's, shows that the author had striven to realise to himself the circumstances hinted at rather than described by Julius, and did give the greatest man of all antiquity, if not of all time, credit for writing something like common sense.

but it would not be safe to speak positively as to thus identifying it. And dismissing it from consideration, we have from this "large pit" three domestic animals, the cow, the goat, and the pig, accompanied by two wild ones, the stag and the roe. The absence from this particular collection, and, indeed, from the entire Cissbury series which has come into my hands, of the dog, would be remarkable if we did not bear in mind the short time for which these pits were ordinarily left open, and then consider at what widely distant intervals in a modern household such an event as the death of a dog takes place. The remains of the dog are found, though very sparingly, in the earliest human habitations, ancient, like modern, savages having domesticated it before they domesticated the pig; and we have Professor Boyd Dawkins' authority (see "Journal of Institute," *l. c.* p. 390) for saying that the dog, as well as the goat and the *Bos longifrons*, were found by Mr. Tyndall in his pit, already dealt with. The fauna of the "large pit" may, perhaps, therefore be considered to belong to a somewhat later date than that of Mr. Tyndall's pit, as it comprises the domestic pig, which was not reported to have been found amongst that collection, and is entirely without any bones of the wild boar, and probably also without any of *Bos primigenius*, which was so abundantly represented there. From the fauna of the "skeleton pit" (see page 376, *l. c.*, Journal), to be hereinafter described, that of the "large pit" does not differ in any particulars which would justify us in thinking that the two pits belonged to different epochs; and here again the evidence from the animal remains coincides with that from other lines of investigation.

List of bones from "Large Pit."

Bos longifrons.—Part of left upper jaw with the two last molars *in situ*, labelled "From large pit." Part of palate, labelled "From 23 ft. below, beneath upper margin." One lower jaw and nine upper jaw molars. End of radius 3 ft. below the surface. Glenoid of scapula, 6 ft. End of radius 20 ft. beneath upper margin. Fragment of scapula 35 ft. below upper margin. Part of right upper jaw of a calf with one tooth of large size in alveolus not through gum, and a second small tooth still in substance of jaw.

Bos primigenius.—A single nasal bone.

Sus scrofa v. domesticus.—Os calcis "from red seam." Left ulna labelled "large pit." Right ulna, similarly labelled, and probably from same individual. Femur of young individual. Fragment of lower jaw of an older individual.

Cervus capreolus.—Horn with part of frontal, 33 ft. beneath upper margin; seventh cervical vertebra.

Cervus elaphus.—Part of radius of young specimen.

Capra hircus.—A considerable part of the skull with both horns, labelled "Red seam," 9 ft. 6 in. below the surface.

These bones afford proof of the presence in this pit of two individuals of *Bos longifrons* and *Sus scrofa v. dom.*, one only of *Cervus capreolus*, *Capra hircus*, and *Cervus elaphus*, though the horns speak to the presence of many more.

A number of molar teeth of the horse, *Equus caballus*, have also come into my hands, labelled "Large pit, superficial," and the addition of this last word is significant when we add that it is applicable to all the remains of the horse found at Cissbury, and that considering the large size and durability of the bones of this animal we have some justification for holding that if the first excavators of the shafts and galleries had domesticated it we should have come upon some osteological evidence of their success. As none such is forthcoming, we have a fresh point of agreement between the fauna of Cissbury and that of other excavations of the stone period.

The bones of a young badger, *Meles taxus*, as also of a young fox, *Canis vulpes*, have been put into my hands from the Cissbury excavations; their exact locality is not specified; and it is possible that they may be of comparatively modern date. It should be noted that neither the red-deer nor the roe antlers are always merely shed horns, portions of the frontal bone being in some cases left in connexion with them.

I come now to the fauna of the "skeleton shaft," the shaft in which a human skeleton was found, as described by Colonel Lane Fox, p. 375, *l. c.* The animal remains found in this shaft not only bear directly upon the mode of life and degree of culture which the excavators of this shaft and its fellows enjoyed, but they also very irrefragably prove that these shafts had been filled up before the second race of stone-using men dug their ditch and threw up their ramparts. It will be convenient, firstly, to give an account of the vertebrate animal remains, as has been already done with those found in Mr. Tyndall's and in the "large pit;" secondly, to show how the shells of the mollusca, found in great abundance in the shaft, bear, as the shells of mollusca so ordinarily do, upon the age of the various strata in which they are found; and, thirdly, to describe the human skeleton found with those remains, attempting whilst doing this to frame some reasonable hypothesis as to the way in which this representative of the horde of Cissbury flint-miners came by her death and burial.

III. Mammalian remains from Skeleton Pit.

The skeleton shaft was a smaller but not a shallower pit than

most of those examined by us at Cissbury; its diameter was 4 ft. 6 in., whilst its depth from the surface, before the ditch was made, was 14 ft. In this pit were found more than 1,000 separate bones and fragments of bones of artiodactyle mammals, mixed up with an almost entirely complete human skeleton, but contrasting with it, firstly, in being usually fragmentary themselves, and, secondly, in making up by no means the full tale of the bones of the skeletons which they represented. The immense majority, about 600 out of 1,000, of the lower animal bones in this pit was made up by small fragments of the bones of the domestic pig, *Sus scrofa* v. *domesticus*; and all the larger and longer bones were imperfect from old breakages. The pig-bones give evidence of the presence in this pit of at least six individuals, two of which had been very young, and none of which had attained the age of eighteen months, as in none of them had the last true molar come into use. It has only been by the fragments of the lower jaws that I have been able to establish the existence of bones from as many as six pigs in this shaft; no one set of bones of any other denomination give evidence of more than four individuals of this species having been present. The very large number of pig-bones, and the small size of some of the fragments of the lower jaws, may serve as something of an excuse for my having given four (see p. 376, "Journal of Institute," Jan., 1876, vol. i., No. 3) as the number of individual pigs represented in this collection from the "skeleton shaft." It is of some consequence, as regards the view we have to form as to the way in which the bones of the lower animals came to be mixed up with those of the human skeleton, to have a precise enumeration of the number of those animals, and as nearly an exact enumeration of the number of bones by which each one was represented as may be possible. If all or a large part of the bones of all the skeletons had been found in the pit with the human skeleton, it might have seemed probable that the animals in question had been sacrificed, as in the familiar instance of the funeral of Patroclus, in honour of, and at the time of the interment of, the human body. But as it was found that the bones, whilst giving evidence of the presence in the pit of six or seven animals, fell far short of containing the proper complement of bones for an equivalent number of skeletons, some skeletons being represented by very few bones, it was plain that the human and the brute skeletons had come together into one and the same receptacle after experiencing, previously to their common interment, entirely different modes of handling. There is no reason to suspect the Cissbury flint-miners of cannibalism, but the animals we may reasonably suppose to have been eaten,

most of the marrow-containing bones having been splintered, and the immense majority of the other bones presenting old breakages.

The fact, which the subjoined table of the bones of the domestic pig will show, that no less than four more or less perfect sets of vertebræ have been recovered from this pit may seem at first hardly in keeping with the view just stated. But the Homeric epithet for the chine, as eaten at feasts (*Iliad*, vii. 321), curiously enough suggests that the vertebræ would be kept together even when thus used; and the comment of the scholiast upon the word in question seems to indicate that the way of utilising the muscles of the back for food with which he was familiar, was not such as to be described by such words as *νώτοισι διηνεκέεσσιν*. It is easy to imagine that savages with flint knives only to carve with would be glad to be spared the trouble of disarticulating the vertebral column into segments, such as we eat under the name of "chine;" and the deeper lying spinal and interspinal muscles and ligaments would keep it all bound together after they had devoured the more superficially placed soft parts. What they left would be flung on to their rubbish heap; from that it migrated, in a way to be hereafter suggested, into the skeleton shaft.

The fact that the lower jaws are invariably broken,* so as to part the alveolar from the other parts of the bone, bears directly upon the employment of the bone for food, as does also the very scanty representation of the brain-containing part of the skull, or indeed of any part of the skull except the upper jaw. The absence of any manubrium sterni, I should explain, following a hint given by Rüttimeyer, by suggesting that it was found useful as a punch when the tynes of the red deer might have become scarce.

An old goat, *Capra hircus*, was represented in the series from this skeleton pit by a radius, a metacarpal, and metatarsal bone, and by four lumbar vertebræ. A kid was also represented by its metatarsal bones.

Two roes, *Cervus capreolus*, were also represented here; the femur and humerus of one had been split for marrow, and was slightly stained with the manganic oxide.

Bos primigenius may perhaps be represented by a couple of thick and rough nasal bones, as well as by a few other fragmentary bones of similar texture, and some much worn premolars. These may have got accidentally mixed up with the bones of the other animals found in larger quantities in this pit, some of the successful drivers of the *urus* having brought away its head

* See Rüttimeyer, "Fauna der Pfahlbauten," p. 14.

from the fatal pitfall. They were found immediately below the ditch bottom.

No bone of red deer, *Cervus elaphus*, has come from this pit to my knowledge; a single tyne may have come from it, but its presence in this series I incline to refer to accidental mixing in more recent times than those just alluded to.

An undetermined fragment of bone, which may have formed part of a bone implement, is also referred to this "Skeleton Pit."

I have had entrusted to me, or found myself in this pit, bones of the shrew mouse, of the field mouse, of the toad, and a few teeth of a cub fox. I am not able to attach any importance to them. The important vertebrate animals in this series are, by their presence, the pig, the goat, and the roe, and by their absence, the red deer and the domestic ox, though possibly some of the few and fragmentary bones spoken of above under the heading *Bos primigenius* may be referrible to that variety of the species.

In the Skeleton Pit—Skeletons of Sus scrofa v. domestica are

Represented by—

4 right	}	Scapulae
4 left		
3 right	}	Humeri
3 left		
3 right	}	Ulnæ
3 left		
3 Radii		
4 right	}	Femora
2 left		
2 right	}	Ischia
2 left		
3 right	}	Pubic bones
3 right		
1 left	}	Iliæ

Fragments of 6 lower jaws, the youngest with complete milk dentition, the oldest with third molar not quite in use.

Four sets of cervical vertebrae—

Of which set No. 1 is complete, and will fit with a set of 8 dorsal, 5 lumbar, and 2 sacral.

Set No. 2 is also complete, and will fit with a set of 12 dorsal and 4 lumbar.

Section No. 3 consists of 3 cervical vertebrae, which will fit with a set

of 14 dorsal and 4 lumbar vertebrae.

Set No. 4 consists of 6 cervical vertebrae, which will fit with a set of 10 dorsal vertebrae and 3 lumbar, with which a right pubic bone and the jaws of a pig, certainly under five months, may be connected as parts of one skeleton.

A fifth set of vertebrae, containing no cervicals, but 6 dorsals and 1 lumbar.

In addition to the vertebrae here specified, there are 2 sacral, 1 caudal, 1 dorsal, and 3 lumbar, which cannot very easily be referred to any one of the five sets, but which, from one reason or another, do not speak very positively to the presence in the series of any part of a sixth skeleton. This fact, however, is proved beyond question by the lower jaws and the fragments of lower jaws contained in the collection.

In addition to the bones already enumerated of the domestic pig, there were very large numbers of ribs, nearly all broken, and a considerable number of phalangeal bones.

IV.—*The mollusca found in the Skeleton Pit and their bearing on its date.*

The mollusca found in the Skeleton Pit, though they do not throw any light upon the habits, furnish an almost perfect

demonstration of the relative antiquities of the pit-diggers, of the woman whose remains were found in the pit, and of the diggers of the ditch who came last of all, little suspecting what "mouldered there below."

The following species of mollusca were found in the pit, adhering to its walls, or amongst the rubble:—*Helix nemoralis*, *Helix arbustorum*, *Helix lapicida*, *Helix rotundata*, *Zonites cellarius*, *Cyclostoma elegans*. They were found in great abundance, but there is no reason to suppose that they had been used for food. There were no specimens of the large edible snail, *Helix pomatia*, found in Cissbury at all, and though the next largest English snail, *Helix aspersa*, was found in other parts of the works excavated, I have no note of it from the Skeleton Pit. Oysters which (see Colonel Lane Fox, *l. c.* 367) were found in one instance at the bottom of the ditch, were not found in any stratum deeper down, and may, therefore, like the horse, be considered as marking a later age. To understand the value of the argument for the antiquity of the shaft and the priority in point of time of the entombment of the woman, whose remains are hereinafter described, to the digging of the ditch, Colonel Lane Fox's section (fig. 3, Pl. xv., *l. c.*) of the skeleton shaft, with the ditch escarp and counter-scarp, should be before the reader and be compared with his description, given at p. 376 *l. c.*, of the structural arrangements there figured. In the skeleton shaft (H., fig. 3, Pl. xv.) the larger snail-shells, by themselves, are sufficient to show, firstly, that the ditch must have been cut through rubble continuous with that which we cleared out of the pit, to the great surprise, no doubt, as also to the great satisfaction of the excavators, who would find the work of cutting through rubble much easier than that of cutting through the natural chalk; and by consequence, secondly, that the shaft was anterior, not posterior, in date to the making of the fort. For it is simply impossible that such large shells as those specified could have worked their way in any abundance through the red seam of silting, made up of fine rain-washed particles, which marked the line of the bottom, and was conformable with the sides of the ditch. The sudden and somewhat unexpected breaking through of this brittle flooring of red silt and the opening into the shaft beneath, out of which a large part of the skeleton had been extracted previously to my coming, by Colonel Lane Fox and Mr. Park Harrison, was a circumstance which, not only by virtue of its general sensational character, but also by forcing upon me the fact of the finely particulate, and therefore the rain washed character of the red seam, made a great impression upon me. The red seam appeared, as it were, to assert its claim to belong to the lower strata by the abrupt manner in which it

broke away, much as one geological strata parts in an escarpment from one above it. As many of the snails below the seam were in large quantity, as well as individually of large size, it was a matter of ocular demonstration that they had in one way or another got down into the pit before the formation of the red seam, of the ditch, and of the ramparts. The length of the galleries connecting shaft E with shaft H (see fig. 1, Pl. xv.) rendered it impossible to think that the snails could have found their way into shaft H, as Colonel Lane Fox had done, by way of those galleries, and there seemed then, as there seems now, to be no escape from the conclusion that the ditch was a later, the shaft an earlier, excavation. The mollusca, however, furnished us with a stronger argument still. *For the shells of the cyclostomata had, in a very great number of cases, their opercula still in relation with them.* This shows beyond all possibility of doubt that the animals had crawled down alive, and had not simply worked down as dead shells, a view which was further rendered untenable by the fact that in a great number of instances the shells, both of the *Cyclostomata* and the *Helias* were adherent to the sides of the shaft. But they would not have crawled down in rubble to the depths at which we found them for any purposes of hibernation, nor could they, I think, have worked their way through the red seam so often referred to. On the other hand, the protection against both cold and drought which an open shaft only 4 ft. 6 in. in diameter and more than three times those dimensions in depth, would offer to snails on a chalk down, very fully explains both their presence and their abundance. This latter point, viz. the great number of these snail-shells, and especially of the *Cyclostomata*, found in the rubble-filled shaft *below*, though not *above*, the red seam, calls for some consideration. It might seem, at first sight, to indicate that the gallery and shaft excavators had left this pit open for a considerable time, departing herein from their usual custom. Snails, however, multiply with very great rapidity under favourable conditions, and the damp and protection from enemies, such as, notably, the pig, which such a shaft would have afforded, would constitute such favourable conditions. And it must be borne in mind that but little weathering of the sides of the shafts had taken place (see Professor Prestwich, "Journal of Institute," *l.c.*, p. 386), and that the rubble with which this shaft, like the others, was filled up, was not altered, softened, or broken up, as it would have been if long exposed to rain and cold. Taking all the facts together, those, to wit, which are put before us in Colonel Lane Fox's Plate xv., with letterpress in explanation at p. 375 *l.c.*; those which I have before me in the very large collection of

fragmentary and of perfect, of brute and of human bones, and those which the snail-shells represent, we may sum them up as follows:—A human skeleton, with nearly every bone represented, including the often missing patellæ and fibulæ, was found with its skull about 2 ft. 6 in. from the bottom of a shaft, which must have been 14 ft. deep originally, but which had got filled up some little way at the time of the falling of the owner of this skull into it. The skull rested on its base and lower jaw; one of the heel bones I found when I cleared out the upper part of the shaft from the "red seam" marking the bottom of the ditch downwards, 1 ft. 7 in. higher up than the skull. This *os calcis* was lying upon a small outstanding ledge of the natural chalk which had been left projecting inwards from the sides of the shaft, on which it had caught, in what we must suppose to have been the sudden and somewhat ungraceful plunge of the woman into the pit. This fall must have bent the head round, as the crown was looking upwards when it was found. The space occupied by the skeleton from the *os calcis* to the crown of the skull was only 1 ft. 7 in., a distance only some 3 inches or so greater than the length of the femur; but that even this distance should have been preserved, it must have been necessary that a considerable quantity of supporting material must have accompanied the woman in her fall, otherwise the entire skeleton would have been found flat on the floor of the shaft. And, as a matter of fact, we found the bones of the pigs above enumerated mixed up confusedly with the human bones and the rubble, in such a manner, that is to say, as to show that they had all come down together, that the human body must, in the singularly illustrative words of the Hebrew prophet, have "gone down to the stones of the pit," with "the carcases trodden under foot" of the lower animals above specified. I am not clear that any evidence is now procurable for deciding whether the woman "went down alive into the pit" or not; there can be no doubt that her whole body, dead or alive, soft parts as well as bony, went down in their natural continuity. And it seems to me that the peculiarities of the collection of lower animal bones appear to necessitate the hypothesis of a rubbish heap having been accumulated close to the open mouth of this shaft, which rubbish heap must somehow or other have been precipitated simultaneously with a large quantity of rubble (from, possibly, shaft K, see Pl. xv.) and the human body into the "skeleton shaft." It is of course easy to suppose that this was done by violence, and was an act of foul play. But it is also possible that a rash step on a mass of rubbish and rubble in frosty weather may have

* Isaiah xiv. 19.

caused an avalanche-like descent of the entire mass of half-eaten bones, of rubble, and of the living woman.

It may be objected, perhaps, that even a set of savages would scarcely have their dwelling-place and their rubbish so near so dangerous a thing as an open pit. To this it may be answered, firstly, that an examination of the pit showed that it had actually been allowed to stand open for some time at all events, a red seam of silting having had time to form itself at a lower level in the shaft than that at which the woman's skull was found, to say nothing of the snails, and of the weathering of the walls to which they were attached; and, secondly, that modern experience shows only too abundantly that very dangerous and life destroying nuisances are often allowed to exist very near human dwelling-places. I have, indeed, sometimes thought that the proximity of the pit may have been thought desirable by the formers of the rubbish heap, as it may have been used as a sort of protective pitfall, affording something of security against marauders. If the woman, whose skeleton I shall now proceed to describe, can be supposed to have fallen into the pit whilst prowling round the hut which the rubbish heap implies, we can understand how it was that she was left to lie as she fell and where she fell, a circumstance which needs explanation.

The skeleton found, as above described, in the skeleton shaft under the ditch of the British fort at Cissbury, was that of a woman of about 25 years of age, of low stature, 4 ft. 9 in., with narrow shoulders and hips, but with a large head of the low-lying or "tapeinocephalic" type, not rarely to be found, as remarked ("*Journal Ethn. Soc.*," Jan., 1871, p. 467) by Professor Busk, amongst "priscan," as also amongst modern Tasmanian and Bushman skulls. As regards the limbs and the limb girdles, it may be remarked that their characters are such as very completely to remove any suspicion as to the assignment of the skeleton to the female sex which the large cubic capacity of the skull might excite. The measurements given below will speak for themselves, but it may be well to state that, though each bone, as a whole, gives an expression of lightness and slightness, and consequently of feebleness in its owner, there are some muscular ridges developed with remarkable distinctness. The right clavicle is much shorter and less curved than the left, but its muscular markings for the pectoralis major, as also the markings on the humerus for the insertion of that muscle and for that of the latissimus dorsi, when compared with the corresponding points on the left side, show that this woman was not left-handed. The two muscles named may have taken on their increased development from exercise in

climbing up and down the shafts of the flint-mines. The development on each femur of a third trochanter to receive the uppermost insertions of the gluteus maximus admits, I think, of being explained by a reference to the same practice, though the femora of the most eminently arboreal of the lower animals do not bear out this suggestion as regards the lower in the same way that they do as regards the upper limbs. The *linea aspera* is replaced by a depression from below the level of this third trochanter down nearly to that of the *foramen nutritium* of the femur, and for the distance corresponding with this depression the femur is much flattened and flanged out. The lower part of the *linea aspera* is much larger on the right side than the left, as though this woman had used the right lower limb by preference, as well as the right upper one. The tibiæ are anteriorly platycnemid. Traces only of the lines of junction between the epiphysis of the clavicle and its shaft, between the two epiphyses of the radius and its shaft, between those of the fibula and its shaft, and between the *cristæ ilii* and the body of the bone, are visible. The vertebræ are completed, and, what is somewhat surprising, the five bones of the sternum are all but completely anchylosed. There can, however, be no doubt as to the age of the woman to whom this skeleton belonged, inasmuch as the first vertebra of the sacrum is still unanchylosed, and the wisdom-teeth, though present in both jaws, are very little, whilst the other teeth are very much, worn. As regards the limbs, the scapulæ, the pelvis, and the clavicles of this skeleton, what Dr. Kuhff has said ("Révue d'Anthropologie," iv. 3, 1875, p. 435), viz. that "plus s'on se rapproche des origines de l'homme, et plus l'on voit s'effacer les caractères différentiels sexuels dans le squelette," is the very reverse of the actual state of the case. As regards the cranial capacity it is otherwise, and the skull of this woman from the skeleton shaft at Cissbury, with a cubic capacity of 105 inches (= 1732·7 cub. cent. = 61·5 oz. av. brain weight), exceeds the immense majority of male skulls cubed and recorded. Out of a large series from very various times and peoples cubed by myself, three only have exceeded this amount. One of these was a Roman of the Romano-British period in Britain, with a cubic capacity of 108 in.; a second was a skull from a British tumulus at Crawley, of probably the time between the evacuation of Britain by the Romans and its entire subjugation by the Saxons, with a capacity of 106·75 cubic inches; the third is a modern European head, with nothing to note in its history, but with a capacity of 105·5 cubic inches.

I have so very lately, in the pages of this Journal, vol. iv. p. 120, Oct., 1875, and elsewhere ("Address on Anthropology,"

British Association, Bristol, 1875), gone over the various rationales which have been offered to account for these, at first sight, somewhat startling results, that it may be superfluous to repeat here what I have already said *locis citatis*.

Looked at in the *norma lateralis*, as given in fig. 1, Pl. xix. vol. v. of the "Journal of the Institute," the skull is seen to have the highest point of its vertical arc just at the coronal suture; the slope of the forehead is a little more pronounced than is usual in female skulls, but, on the other hand, the parieto-occipital region has the vertical dip which, as Ecker has well pointed out, is so characteristic of such crania. As in typical dolichocephalic skulls, the glabello-inial is shorter than the glabello-postremal line, and the lambdoid suture comes largely into view. As in many "priscan" skulls, the coronoid process of the lower jaw fails to pass above the level of the lower edge of the zygoma. The anterior margin of the squamous nearly (but not quite, as drawn in the figure referred to) reaches the frontal bone. The alveolar border of the upper jaw describes a curve strongly convex downwards, and broken into, in the horizontal plane, by the great prominence of the sockets for the canines.

The skull when placed without the lower jaw on a horizontal surface is supported by the first and second upper molars and by the conceptaculum cerebelli. When looked at in the *norma frontalis* this skull strikes the observer, firstly, as being eminently well filled or rounded out in the supra-temporal regions, but, secondly, as having the impression of culture which is given by this development, neutralised by the peculiar conformation of the upper and lower jaws. The large size of the sockets of the canines in both jaws gives a squareness to that region of the face, whilst in the lower jaw the triangular raised area of the mentum is feebly developed, as compared with the alveolar part of the jaw.

The lower jaw, when placed on a horizontal plane, touches it with its inferior border on the left side only by a segment corresponding with the two anterior true molars. A wide interval separates the symphysis from such a plane, and though the angle of the jaw on the right side does aid in supporting it when thus placed, that on the left does not. Both angles are rounded off. The foramen mentale on the left opens a little further back, viz. immediately beneath the second præmolar, than is usual in European jaws. Just above it is seen the opening of an alveolar abscess in relation with the premolar, which appears to have been broken across midway between its crown and its neck during life, and to have had its pulp cavities consequently exposed. The apex of the coronoid projects only about one-tenth of an inch above the level of the condyle when

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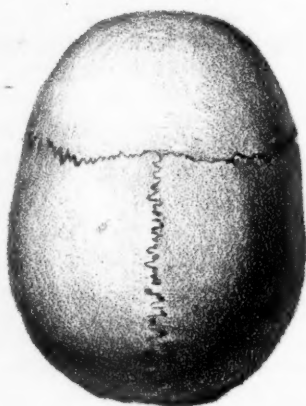


Fig. 2.

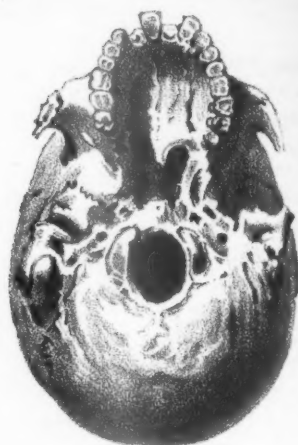


Fig. 3.

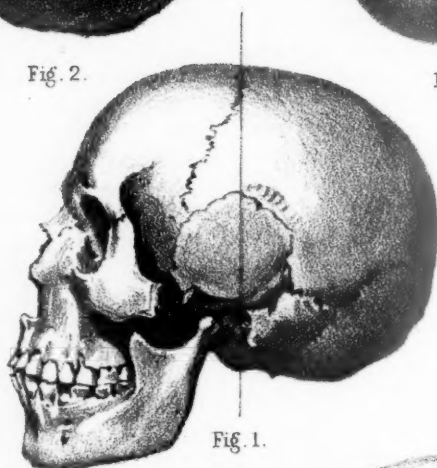


Fig. 1.



Fig. 4.



Fig. 5.

C. F. Hall Lith. Castle St. Holborn, E.C.

the jaw rests on a flat surface. Coupling these peculiarities with the shortness of the coronoid and the worn condition of the two anterior true molars, we may say that the lower jaw would, if taken alone, have furnished a strong ground for conjecturing that its owner had lived in early times. For though well-formed jaws are found in early cemeteries, it is certainly rare to find such a jaw as this in the burial places even of the bronze period. The thickness of the bone is referable to the irritation which the only recently completed evolution of the wisdom-teeth, as well as the injured premolar, would cause; when allowance is made for this, the sexual characters of this lower jaw are as distinct as those of any other part of the skeleton, and notably its inferiority in the points of width and of muscular markings.

The lower parts of both nasals are lost; the upper halves form a broad and low arch, above which a moderately developed glabella passes without any mesial depression into similarly developed supraciliary eminences on either side. The left supra-orbital notch had, even at the early age at which this woman died, been converted into a foramen. Viewed from behind, the lateral walls of the occipital pentagon are seen to converge somewhat from the point of maximum width, which lies a little below the level of the faintly marked parietal tuberosities. In this aspect the skull is seen to narrow rapidly, as if pinched in, immediately behind this level of maximum width (see "*Journal of Institute*," vol. v. p. 124). The upper part of the occipital bone, however, though its sides are conformable with the posterior and inferior portions of the parietals, is not produced so far backwards as is sometimes the case in skulls of this type, and specially in male skulls, and, on account of this truncation, it does not come largely into view in the norma verticalis. In this aspect the sides of the cranium are seen, as we follow them forwards from the point of maximum width, to undulate gently inwards over a space corresponding with a shallow post-coronal depression, and then to taper very gradually to the region of the frontal tubera; as we follow them backwards they converge with much greater rapidity, but still without giving a sharply pointed occipital end to the vertical oval. It is aphenozygous. A circular depression, about half an inch in diameter, is seen on the right parietal bone, its floor is covered with vascular ramifications, but the injury to which its formation is due had been recovered from long before death. All the cranial sutures in the vault of the skull are free from ankylosis, except the frontal, which, as usual, is closed, though it may be stated here that it is occasionally patent even in undoubtedly priscan skulls. The occipito-sphenoid suture had

been entirely closed before death, but there are some traces of the intermaxillary still visible upon the palate. The palate is well formed, deep, and elliptical. The wisdom-teeth alone have escaped degradation through wear, and as the entire set of teeth is present in the lower jaw and is similarly worn, this fact shows that this woman lived upon a coarse or ill-prepared diet.

The measurements of the bones and other points upon which the preceding statements are based are as follows:—

Measurements of Cissbury Skeleton.

SKULL.	
	Cub. inches.
Cubic capacity	105
Circumference	21·3
Extreme length	7·7
Glabello-inial length	7·4
Extreme breadth	5·7
Vertical height	5·85
Absolute height	5·6
Least frontal width	3·1
Greatest frontal width	5
Frontal arc	5·1
Parietal arc	6
Occipital arc	5
Height of orbit	1·3
Width of orbit	1·55
Length of nose	2
Width of nose	0·9
Width of root of nose	0·85
Length of face	3
Interangular diameter of lower jaw	3·4
	Cub. inches.
Depth of lower jaw at symphysis	1·4
Width of ascending ramus	1·45
Interzygomatic width, approximately	4·6
Cephalic index	74
Antero-posterior index*	53
Orbital index	83
Nasal index	45
Distance from foramen occipit. to fronto-nasal suture	4
Distance from foramen occipit. to nasal spine	3·75
Distance from foramen occipit. to alveolar edge	4
Basilar angle	23°
Facial angles, taken with M. Broca's goniometer, to root of nasal spine	68°
to alveolar edge	65°

LONG BONES.	
Femur	15·8
Tibia	12·5
Humerus	11·3
Radius	8·6
Right clavicle	4·8
Left clavicle	5·4
Transverse diameter from pelvis	3·8
Transverse diameter between most distant parts of ilia	9·1
Length of scapula from glenoid fossa to vertebral border along spine	3·9
Length along lower margin	4·6

DESCRIPTION OF PLATE XIX.

Fig. 1.—Skull of female found in skeleton shaft at Cissbury; *norma lateralis*.

Fig. 2.—*Norma verticalis*.

Fig. 3.—*Norma basalis*.

Fig. 4.—*Norma occipitalis*.

Fig. 5.—*Norma frontalis*.

For description in detail, see p. 33 *et seq.*

MARCH 14th, 1876.

Colonel LANE FOX, President, *in the Chair.*

The minutes of the previous meeting were read and confirmed.

The following list of presents was read, and thanks were ordered to be returned to the respective donors.

FOR THE LIBRARY.

From the ASSOCIATION.—Journal of the East India Association. Vol. IX. No. 3.

From the SOCIETY.—Proceedings of the Royal Society. Vol. XXIV. No. 166.

From Prof. F. V. HAYDEN.—Bulletin of the U.S. Geological Survey of Territories. No. 6, 1876, 8vo; Ditto, Vol. II., 4to; 40 Photographs, ditto.

From the SOCIETY.—Proceedings of the Royal Geographical Society. Vol. XX. No. 2.

From the REGISTRAR-GENERAL.—Statistics of the Colony of New Zealand for 1874.

From the EDITOR.—Materiaux pour l'Histoire de l'Homme, Feb., 1876.

From the INSTITUTION.—Fifty-eighth Annual Report of the Royal Institution of Cornwall.

From the EDITOR.—Revue Scientifique. Nos. 35-37, 1876.

From the SOCIETY.—Sitzungsberichte der Physikalisch-Medicinischen Societät. Zu Erlangen, 1874-5.

From the SOCIETY.—Bulletin de la Société d'Anthropologie de Paris. Vol. IX. No. 6. Vol. X. No. 4.

From A. L. LEWIS, Esq.—Anthropologia. Vol. I. Nos. 1-5.

From the EDITOR—Nature (to date).

FOR THE MUSEUM.

From W. E. STANBRIDGE, Esq.—Flat stone for grinding Nardo seed on, from Australia; two hand stones for ditto; one spear-head from the Gulf of Carpentaria; seven hand stones for cutting.

Captain MELFORT CAMPBELL, President of Nevis, exhibited some stone implements from Honduras and Turks and Caicos Islands, on which the following remarks by Mr. FRANKS were read:—

1. A knife or dagger, 10½ in. long, made out of a thick flake of buff-coloured chert, of a fine amber hue; the flake has been nearly prismatic, and the lower end has been chipped away all round so as to form a handle. It was found near Belize, British

Honduras. The same type has been more than once discovered in the locality. There are two specimens in the Christy collection, but very inferior in size and somewhat differing in material. One of these, $7\frac{1}{2}$ in. long, is of a black flint, and was found at Mahoc Kaye, river Belize; the other, $5\frac{3}{4}$ in. long, of a whitish buff chert or flint, was discovered in a mound on a branch of the river Belize. A weapon of the same kind is engraved in "Stevens' Flint Chips" (Lond., 1870), and is preserved in the Blackmore Museum. This is stated to have been found in British Honduras, with some still more singular implements, somewhat of a horse-shoe shape, one of which is in the Blackmore Museum, and a very perfect specimen in the collection of Colonel Lane Fox, engraved in "Proceedings of the Society of Antiquaries," 2nd series, vol. v. p. 94, and in the "Archæological Journal," vol. xxx. p. 34.

A very exquisite knife or dagger of semi-transparent flint has been deposited in the Christy collection by Mr. Charles Harrison, which was discovered near the mouth of the river Belize. It is very flat, symmetrical, and very neatly chipped. It resembles in general form a slightly barbed arrowhead, but it is $10\frac{1}{2}$ in. long, the same length as the specimen under consideration.

2. A celt of the usual West Indian type, made of a mottled greenish stone, apparently jadeite; the lower end is highly polished. Length 3 in.

3. A celt of elongated form, made of a nearly black diorite, well polished. Length $4\frac{5}{8}$ in.

4. A celt of brownish diorite, of a similar form to the last. Length $2\frac{3}{4}$ in.

The three celts were found at the Turks and Caicos Islands, West Indies.

5. A ball of argillaceous limestone, $2\frac{1}{2}$ in. in diameter, with a corrugated surface, and a deeper depression in one place. Such balls are found in large numbers near the salt ponds, and their origin has not yet been ascertained. Mr. Etheridge, of the Museum of Practical Geology, has had one of them cut in two, and finds it to be of the same material throughout, and to exhibit no trace of organic remains. He seems disposed to refer their origin to the action of water. Dr. Hector has suggested that they may be partly due to these causes, and, still further, to large fucoids, with the roots of which they have become entangled, and thus thrown on to the seashore. The ancient inhabitants may have collected and utilised them for some purpose.

Mr. George Gibbs, a resident in Great Turks Island, has published in the *Turks Island Standard* newspaper, in a letter

dated 10th August, 1874, some observations on the antiquities of these islands, from which the following extracts may be of interest to the Institute:—

“From time to time, during the last twenty years to my own knowledge, and previous to which period, probably more frequently, have been picked up at these islands certain stone, or mineral substances, which have evidently been wrought to their present shapes by means of human hands. They were, doubtless, originally implements used by the Indian aborigines of these islands. Some of them are a flat elliptical wedge form, and vary in size from three inches to ten inches in length; these are known here commonly by the name of ‘thunderbolts,’ and are regarded as objects of superstition by certain people, who believe they came from the heavens during thunder storms, and that by having one of them in the house the danger of the building being struck by lightning is thereby averted. Others are in the shape of reptiles, &c.; these latter were probably idols. One I have seen, which, from its peculiar form and size, I think was intended to be used as a tomahawk or war-club. These all appear to be formed, although they vary in colour—some being black, others of a greenish tinge, and others of a grey ashy colour—of a similar substance. This material in a rough state, or in fact in any other form than that of these wrought implements, is not to be found here; the stones and rocks of our islands are all, without exception, of a limestone or of a coralline formation.

“History tells us that the Indians of the West Indies were, many of them, a migratory race, particularly the Caribs, who went about in their canoes during the mild season of the year for the purpose of acquiring plunder and slaves to carry back with them; going from island to island, probably from the continent to Trinidad, and following the group of islands to St. Thomas, Porto Rico, St. Domingo, on to Turks Islands, and the Bahamas. Our aborigines may have come from Yucatan; the distance from Yucatan to the west end of the island of Cuba being about the same as that from Florida to Andros Island, in the Bahamas. I do not think, however, that the inhabitants of these islands came from the north of us, more particularly from the fact, that in the various descriptions and engravings of aboriginal Indian implements that I have met with as being found in the northern continent, I have not seen any that correspond at all with those found in Yucatan. There is a similarity, especially in Stevens’ ‘Travels in Yucatan’ (see engravings, vol. i. p. 413, and vol. ii. p. 342), in which I think I find a resemblance to those known here by the name of ‘thunderbolts,’ and also to certain round stones found very plentifully here,

These round stones which I now allude to are not of obsidian, but are apparently of the same material as the common limestone of these islands; they are of a spherical form, generally about two inches in diameter (none larger, although they are found smaller), and have this peculiarity, viz. that they have almost invariably a depression in each, about the size of the little finger in circumference and from one-half to three-quarters of an inch in depth, as if when just made and soft they were placed thereby on a stick to dry. These nodules, as you may call them, may have been thus made of clay by the Indians to be used in slings or thrown by the hand; or they may be petrified vegetable or animal matter; or possibly they may have been formed by crabs. The latter, however, I do not think probable, for if it were so, it is natural to suppose that they would be found occasionally in a soft state, in which condition they never, to my own knowledge, have been met with.

"We learn by historical authority that the natives of the Bahama Islands were all removed by the Spaniards to the island of St. Domingo to work in their mines, and so effectually were these islands depopulated that as far back as two hundred years ago there were none of the aborigines to be found in any of them.

"These old Indian relics, or you may say now curiosities, possess in reality no intrinsic worth, being only valuable as mementoes of an exterminated race of fellow-beings, and of whom these imperishable articles are the only traces left behind, excepting broken pieces of pottery, quantities of which are to be found both on the surface and on turning up the ground in certain localities in the adjacent Caicos Islands."

Mr. STANBRIDGE, of Daylesford, Victoria, exhibited and presented eleven stone implements from Australia. Another implement (No. 12) was also lent for exhibition, but is to be returned to Mr. Stanbridge at the end of three years for presentation to the museum at Daylesford, when a cast shall be returned. The following is the list of the above-mentioned implements:—

LIST OF STONE IMPLEMENTS *presented and lent by Mr. W. E. STANBRIDGE, M.A.I., of Daylesford, Victoria, Australia.*

1. *Thouwin*, or native axe, found at Kooba, north bank Murrumbidgee river, N.S. Wales, 1875.

2. Ditto.

3. Ditto.

4. Ditto.

5. Broken axe-head, found near a spring near Daylesford, Victoria, 1873.

6. *Cutting-stone* found near Daylesford, 1865.

7. *Spear-head* (stone) near Bourktown, in the Gulf of Carpentaria, 1873; shaft 10 ft. long, and thrown with throwing stick, "wummera."

8. *Khunda*, native hand-stone for cutting, found at Kooba, Murrumbidgee river, Nov., 1875.

9. *Yowwi*, or flat stone, for grinding Nardoo seed on, from Teryawynga, Darling river, N.S. Wales, 1875.

10. *Wallong* found at Eurolii, Murrumbidgee river, N.S. Wales, used for grinding Nardoo seed on the Yowwi, 1871.

11. Ditto, egg-shaped, found at Teryawynga, 1875.

12. Digging Stone found near Daylesford, 1873.

DISCUSSION.

The PRESIDENT considered that the digging tool (No. 12) was actually an unfinished implement, which would in the finishing be materially reduced in size. It had, however, apparently been used already, one of its ends being much rubbed.

Thanks were ordered to be returned to Captain Campbell and Mr. Stanbridge for the exhibitions, and to the latter for his gifts to the Institute.

Mr. Howorth read the following paper:—

The ARIAN NOMADES. Part I.—The SAUROMATÆ or SARMATÆ.

By your favour I have been permitted to read before the Society a series of papers on the westerly drifting of nomades from the 5th to the 19th century, in which I have attempted to correlate the facts accessible to me, and to somewhat disentangle the crooked web into which Eastern nationalities have been woven. I intended to follow this up with an account of the historical ethnology of the Slavs, for which I have accumulated considerable materials, but find that that question is complicated by a further one, namely, the race affinities and movements of the earlier nomades, and, further, that this latter question is in a deplorable condition of confusion, I have thought it more prudent to analyse it first. As I have said before, and am never weary of repeating, I claim nothing more for these researches than that they are, perhaps, based upon a wider induction of facts than others which have preceded them in the same field. Our science is like every other science, its premises are tentative only and provisional. All human hypothesis must be so. We can only compass a uni-

versal law when we shall have catalogued every fact. To suppose that we know any universal law, is to suppose that the secrets of the whole universe have been committed to us. They have not, and it is mere pretence which arrogates for any law in any science more than this, that it explains such facts as are at present accessible. I feel this very much when I read the criticisms of some philosophers on the scientific creed of a previous era. Because a man's hypothesis was wrong, and we have proved it to be so, I value it none the less. It enabled a great number of facts to be explained. Mine can do no more; the ultimate truth or falsity is a mere lottery. He would be a wise man indeed who could command belief when he spoke, and said that no future-discovered fact would or could disturb his conclusion. It is the labour—the hard, dry, repulsive labour—the patience and the care of previous inquiries, which makes our inquiry possible; and it is those qualities which ought to command our gratitude, while we dissent from the conclusions they have arrived at. It is but poor sport to laugh at the errors of those who have gone before, and to sneer at those who, through a smoked glass, could not see as clearly as we, whose glass is not so dim.

I prefer to stand uncovered before the shade of a man like Klaproth than to be flinging stones at him because he sometimes erred. This homiletic preface is meant to justify what often needs justification to the critics of our science, though I hope not to many here, namely, the tentative character of our results, which may be reversed, or at least qualified, by a very small discovery.

I will now proceed with my subject. The Sarmatæ form a good commencement, in the first place because their affinities have been more than usually fought about; and, secondly, because having once fixed them, we can, with considerable certainty, fix those of some of their neighbours.

Since the revival of learning, until recently, there have been, I believe, two theories about the Sarmatæ—one that they were Germans, the other, supported by an immense array of authorities, that they were Slavs, and the ancestors of the various Slavic nations of modern times. This latter view is, I believe, with one exception, almost universally prevalent still in England, and Mr. Latham, in his various works, in which he has championed the cause of the Slavs so bravely, seems to consider the matter so certain that he does not stop to prove it, but takes it for granted; yet I believe that no conclusion is more faulty.

Schafarik, the great historian of the Slavs long ago, proved to my mind conclusively, that whatever else the Sarmatæ were, they were not Slavs, and his conclusions have, I believe, been

recently generally accepted in Germany, and in England by Mr. Gent in the Arnold prize essay on the Scyths, written in 1870, and which is a very able performance. Schafarik accumulated the material which enables a decision to be arrived at, but he contented himself with a negative conclusion. Mr. Gent in this respect follows him, and I find him expressing himself in these terms: "So far, therefore, is the name of Sarmatian from being the ancient representative of the Slavic family, that we should prefer to say that the true Sarmatian blood is more *nearly extinct than can be asserted of any other race*. It was a race powerful only from its reckless savageness, and maintained so long chiefly by its promiscuous alliances" (*op. cit.* 34). I believe, on the contrary, that, far from being extinct, they have left a vigorous branch behind in the Caucasus, namely, the Ossetes, besides having improved a large portion of the more vigorous races of Europe with their blood; but this is another matter. In the present paper I shall content myself with proving that the Ossetes are descendants of the Sarmatæ, a conclusion in which I owe a good deal to the researches of Vivien St. Martin, the very able President of the French Geographical Society, whose various papers are models of ingenuity and profound research. On the present occasion I shall extract a good many facts from his memoir on the ancient geography of the Caucasus and his "Researches on the Primitive Inhabitants of the Caucasus."

He says that the name Ossète, which has become naturalised in Europe, is taken from Ossethi, the Georgian name for the country inhabited by the Ose, and is formed of the ethnic name Ose and Ethi, which means country or land. Ossète, therefore, is a corrupt form, and in speaking of the race we ought to speak of the Ose, Ousi, or Ossi, which is the Georgian form of the name, or As, which is the form it takes in the Russian narratives. The As call themselves Ir or Iron, and their country Ironistan, a fact to which I shall revert presently.

The arrival of Batu Khan with the Golden Horde on the Volga and Don made a notable revolution, and disturbed the distribution of tribes very considerably. We are told that, *inter alia*, they ravaged many flourishing towns belonging to the Ossetes, whose settlements then probably reached as far as the Terek. And we are again told that, at a later date, having embroiled themselves with the Khans of the Crimea, they were driven out of the plains and lower mountains chiefly by the aid of the Circassians (who were vassals of the Krim Tartars). They were driven out of the two Kabardas, where the Circassians established themselves in their place, and were obliged to become tributary to the latter, and remained so until the

Russian aggressions had weakened their authority. Those who lived south of the mountains became dependent on the Georgians (Klaproth, "Taubleau du Caucase," 66). This account is confirmed by Haxthausen, who says: "Those Ossetes with whom I conversed had very obscure traditions of the origin, migration, and history of their race. They said that their ancestors came originally over the mountains from the north; that they at first dwelt in the country now occupied by the Circassians, and had been driven onward as far as their present territory by other races pressing behind ("Transcaucasia," 394). One of these races, who, no doubt, pushed upon them, has itself been terribly scattered, namely, the Turkish race, whose various fragments are found in the mountains west of the Os. They are descended from the ancient Comans, and were also thrust out of a portion of the Kabarda by the Circassians, as I have elsewhere described.

In mapping out the ethnology of the Northern Caucasus as it was before the arrival of the Golden Horde, we must extend the Os settlements as far north as the Terek, upon whose marvellous network of head streams they dwelt, bounded on the west by the Circassians, on the east by those tribes classed by the Russians under the name of Mitzgeghi. Let us cross the Terek. On doing so we enter the vast plain known to the various Turkish nomades as Desht Kiptchak (the Teste Kiptchak of Reineggs, i. 34), the desert or Steppe of Kiptchak, i.e. of the Comans, for, as we know from the Byzantine authorities, Kiptchak was the indigenous name of the Turkish Comans.

The plain is, in fact, the Kumestan of the Persians and the Kumuk of the Arab writers, and doubtless received these names from the languid river that threads its centre and barely creeps to the Caspian—the Kuma. A large portion of its eastern part has probably only been reclaimed comparatively lately from the Caspian. I have already devoted a paper to the Comans, in which their affinities are pointed out, and shown to be purely Turkish. In which also it is shown that they were very recent immigrants into the country on this side the Volga; that they, in fact, only crossed the Volga at the end of the 10th century. They, therefore, were not the Kumuks of the early Arabs, who relate how a large part of the Caucasus was converted to the faith, and who have a good deal to say about the Kumuks, whom they conquered and converted, and we are told, having done so, named them Kazi Kumuks, or believing Kumuks, as distinguished from the mountaineer Lesghs, who refused the faith, and were known as the Kafir Kumuks (Reineggs, *op. cit.* 90). As I have shown in a previous paper,

these Kumuks, who were conquered by the Arabs, are now represented by the Kazi Kumuks and Kara Kaitaks of Daghestan. I have argued further that they were the same people; otherwise known as Khazas, and who held the plains bounding the Caspian on the west as far north as the Volga, the most potent race of these regions in the earlier middle ages. So that the combined effect of the invasion of the Turkish Kiptchaks and of the Golden Horde into Europe has been to drive the redoubtable race of the Khazars into the recesses of Daghestan; but it also drove other tribes further south. I believe it had a very considerable effect on the Alans, but this is not our present question, which is to deal with the As. Now it seems certain that the As were among the nations who lived about the Lower Don before the arrival of these invaders, not only from their own traditions, which make them to have lived on the Don in former days, but also from the early Russian chroniclers, who name them in their accounts of their victories on the Mæotis and Black Sea. Thus, after mentioning the overthrow of the Khazars by Sviatoslaf in 965, Nestor goes on to say that the latter also subjected the Yasses and the Kassogés. The latter were Circassians, whose country in the 10th century was called Kassakhia, while they are still called Kassakhes by the As (see Karamzin, French ed., i. 214). In the year 1029 Yaroslaf took many of the Yasses prisoners, and carried them off to Russia (Schafarik, "Slavische Alterthumer," i. 354). Again, in 1116, Karamzin speaks thus of them, quoting, apparently, Nestor. "Yaropolk, the third son of Monomachos (*i.e.* of Vladimir Monomachos), had at the same time brilliant successes in this war which he prosecuted on the Don. He captured from the Poloutzi (*i.e.* the Comans) the towns of Balin, Tchechluef and Sougrof, and made prisoners many *Yasses who dwelt there*, among whom was a beautiful girl, whom he married" (Karamzin, ii. 191.) Achmatof, in the atlas attached to Karamzin's history, places the Yasses on the Terek, possibly because they even then wandered so far. A portion of the Caucasus was called the Yassishan Mountain in the Russian chronicles of the 13th and 14th century (Schafarik, *op. cit.* i. 354, note). Lastly, we have the chief city of these parts, Azof, whose old name was Aza (V. St. Martin, "Recherches," 167), which, no doubt, received its name from them at a time when they dominated far to the north of their present seats.

We have thus traced the existence of the As in the neighbourhood of the Mæotis and the Don, as far back as the 10th century. From this point backwards we have a blank for several centuries in the history of these regions, but when we again come upon detailed accounts of it in the classical

geographers we have abundant proof that the As were there then.

Let us now examine these classical authorities. At the earliest dawn of Western history we find the country between the Don and the Volga, the plains of the Kuban and the Crimea, chiefly occupied by tribes whose names were formed or compounded in various ways out of the primitive race-name Madai or Medes. Thus there were the Mærotai, or rather Maitai, mentioned by Herodotus and other writers, and also in various inscriptions, who gave their name to the Mæotis or Sea of Azof. There were Sauromatai or Sarmatæ, Jaxamatæ, Kharimatæ, Thyssamatæ, Agamatæ, &c. That these tribes were all generically, and even more closely related seems beyond doubt, for several of the clans numbered among the Mæoti by Strabo are classed by Pliny among the Sarmatæ. Vivien St. Martin contends that a passage in the 11th Book of Strabo has been misread by translators, and that we there have mentioned the Mæotai-Asi, one word qualifying the other (*op. cit.* 160), while the Jaxamatæ are identified with both the latter in the following passage of the anonymous Periplus of the Euxine, "Post Sarmatas est genus Mæotarum qui Jaxomatæ appellantur ut testatur Demetrius . . . Juxta Ephorum vero vocatur Sauromatarum gens" (Schafarik, i. 340, note). Let us now say a few words on the etymology of these names. Here and elsewhere I am much indebted to Vivien St. Martin. Mæt, he says, is the national ethnic name of the Medic race. The Hebrews wrote it Madai, the cuneiform inscriptions Mad, the Armenians Mata; thus etymologically the Maitai of the Mæotis are identical with the Medes of Persia. We shall presently show that they were beyond doubt the same people.

Sarmatæ, or Sauromatæ as the Greeks wrote it ("Sarmatæ græcis Sauromatæ," Pliny, iv. 25), is compounded of the particle sar or sauro, and the name Mede Sar being in fact a qualifying particle. Some authors make this word identical with the Arian word saur, sar, or ser, meaning head or extremity, and make Sarmati to mean the furthest Medes. Schafarik says that in some Asiatic dialects sara means desert or steppe, and compares it with the indigenous name of the Kirghiz Kazaks, i.e. Sare Kaisaka (Vivien St. Martin, "Recherches sur les Populations Primitives, &c., du Caucase," 170 and 171). Gatterer derives their name from the Lithuanian, Szaure North, thus making Sauromata mean Northern Medes. There is still another etymology available, to which I lean; sar in the various Ugrian tongues means yellow or light red (*vide* the author's paper on the 'Origines of the Norsemen,' in the "Ethnological Journal"). Sarmatæ then would mean yellow or tawny

Medes. As I have said, Ephorus makes the Jaxamatæ a Sarmatic people, and this we have reported for us not only in the anonymous Periplus already cited, but also in the fragments of Scymnus, and in Stephanus of Byzantium (Schafarik, 340, note 2, and Vivien St. Martin, *op. cit.* 161, note 4). They are placed by the authors who name them in the very country of the Sauromatæ, and Mela attributes to their women the same customs assigned to those of the Sarmatæ, and I have no doubt that they were a branch of the race, an opinion held by Schafarik, Vivien St. Martin, and other authorities. Now Jaxamatæ is simply Jaz or Az Matai, *i.e.* Jaz or Az Medes, and Jaz or Az is a notable name in this region, from the time when Æschylus describes the tortures of Prometheus bound on the rock in the midst of the people who inhabited the sacred land of Asia, at the foot of the rocks of the Caucasus, and as far as the Mæotis ("Prom. Vinct.," v. 399 *et seq.*, quoted by Vivien St. Martin, *op. cit.* 158), until our own day, when, as I have shown, the As or Ossètes still frequent it; and it was from this sacred land of the Asi that the great continent of Asia eventually took its name.

The Jaxamatæ, then, I hold to have been a section of the Sauromatæ, differenced from the Maitai or Medes proper in some way. Let us now inquire into their traditional origin. Diodorus reports how the Scythians grew into a mighty nation north of the Caucasus, and made incursions into Asia Minor and Media. Out of the latter they took away a colony, which they placed near the river Tanais, which people were called Sauromatians, who, many years after increasing in number and power, wasting the greatest part of Scythia and rooting out all that they conquered, totally ruined the whole nation (Diodorus, ii. 111). This invasion of Media is fixed by Potocki and Klaproth in the year 633 B.C., when the Scyths made an invasion south of the Caucasus, under their king, Madues (Vivien St. Martin, *op. cit.* 151). I very much doubt the whole tradition, and it is chiefly valuable as showing that these northern Medes were held to be of the same race as the southern ones by Diodorus, or the author he abstracted, an opinion shared by Pliny, who has the passage, "Dein Tanain amnem, gemino ore influentem, colunt Saramatæ, Medorum ut ferunt soboles," &c. (Schafarik, i. 338). Herodotus, who lived much nearer the time than either of those authors, has a different tradition. He says:—"It is reported of the Sauromatæ that when the Greeks fought with the Amazons, whom the Scythians call oior pata, or man-slayers after gaining the battle of the Thermodon the Greeks put to sea, taking with them on board three of their vessels all the Amazons

whom they had made prisoners; these women upon the voyage rose up against the crews and massacred them to a man. As, however, they were quite strange to ships, and did not know how to use either rudder, sails, or oars, they were carried, after the death of the men, where the winds and the waves listed; at last they reached the shores of the *Palus Mæotis*, and came to a place called *Cremni*, or 'the cliffs,' which is in the country of the free Scythians. Here they went ashore, and proceeded by land towards the inhabited regions. The first herd of horses which they fell in with they seized, and, mounted upon their backs, fell to plundering the Scythian territory. The Scyths could not tell what to make of the attack upon them—the dress, the language, the nation itself were alike unknown; whence the enemy had come even was a marvel. Imagining, however, that they were all men of the same age, they went out against them and fought a battle. Some of the bodies of the slain fell into their hands, whereby they discovered the truth. Hereupon they deliberated, and made a resolve to kill no more of them, but to send against them a detachment of the youngest men, as near as they could guess equal to the women in number, with orders to encamp in their neighbourhood, and do as they saw them do. When the Amazons advanced against them they were to retire and avoid a fight; when they halted, the young men were to approach and pitch their camp near the camp of the enemy. All this they did on account of their strong desire to obtain children from so notable a race. So the youths departed and obeyed the orders which had been given. The Amazons soon found out that they had not come to do them any harm, and so they on their part ceased to offer the Scythians any molestation. And now, day after day, the camps approached nearer to one another; both parties led the same life, neither having anything but their arms and horses, so that they were forced to support themselves by hunting and pillage.

"At last an incident brought two of them together—the man easily gained the good graces of the woman, who bade him by signs (for they did not understand each other's language) to bring a friend the next day to the spot where they had met. He did so, and the woman kept her word. When the rest of the youths heard what had taken place, they also sought and gained the favour of the other Amazons.

"The two camps were then joined in one, the Scythians living with the Amazons as their wives; and the men were unable to learn the tongue of the women, but the women soon caught up the tongue of the men. When they could thus understand one another, the Scyths addressed the Amazons in

these words: 'We have parents and properties, let us therefore give up this mode of life and return to our nation and live with them. You shall be our wives there no less than here, and we promise you to have no others.' But the Amazons said: 'We could not live with your women, our customs are quite different from theirs; to draw the bow, to hurl the javelin, to bestride the horse, these are our arts, of womanly employments we know nothing. Your women, on the contrary, do none of these things, but stay at home in their wagons, engaged in womanish tasks, and never go out to hunt, or to do anything. We should never agree together. But if you truly wish to keep us as your wives, and would conduct yourselves with strict justice towards us, go you home to your parents, bid them give you your inheritance, and then come back to us, and let us and you live together by ourselves.'

"The youths approved of this advice, and followed it. They went and got the portion of goods which fell to them, returned with it, and rejoined their wives, who then addressed them in these words following: 'We are ashamed and afraid to live in the country where we now are. Not only have we stolen you from your fathers, but we have done great damage to Scythia by our ravages. As you like us for wives, grant the request we make of you. Let us leave this country together and dwell beyond the Tanais.' Again the youths complied.

"Crossing the Tanais, they journeyed eastward a distance of three days' march from that stream; and again northward, a distance of three days' march from the Palus Mæotis. Here they came to the country where they now live, and took up their abode in it. The women of the Sauromatæ have continued from that day to the present to observe their ancient customs, frequently hunting on horseback with their husbands, sometimes even unaccompanied; in war, taking the field and wearing the very same dress as the men" (Herodotus, Rawlinson's trans., iii. 96-100).

This curious passage has given rise to a great deal of commentary. It is not easy to say what amount of foundation it may have; whether it is merely one of the fables which the credulous historian has handed down to us, or whether it be something more. I hope to discuss the question further some other time, when we have to criticise the ethnological affinity of the Scyths and Amazons.

I will now bring together a conspectus of ancient authorities on the Sarmatæ, arranged chronologically. The first author we shall mention is Hecataeus, who lived in the beginning of the sixth century, B.C., fifty years before Herodotus, and a fragment of whose "Periplus" is preserved by Stephen of Byzan-

tium. He tells us that the Ixibatai, corrected by V. St. Martin to Ixamatæ, lived on the borders of Pontus, close to Sindica, as the French geographer says; this is almost word for word what Strabo says of the Asi of the Bosphorus (V. St. Martin, *op. cit.* 163). Æschylus, who was nearly a contemporary of Hecataeus, also names Asii here, so that we find the Sarmatæ in the very earliest accounts we have, styled Asii, or *Jaxa Matæ*, as being probably the indigenous name. Herodotus is our next author; he places the Sauromatæ, as we have seen, above the Maotia. He tells us that they spoke the language of Scythia, but had never talked it correctly, because the Amazons learnt it imperfectly at the first (the meaning of this I hope to clear up in a paper on the Scythians). Their marriage law laid it down that no girl should marry till she had killed a man in battle. (This is stated also by Nicholas of Damascus, Rawlinson's note, *Her.* iii. 100.) Sometimes it happened that a woman died unmarried at an advanced age, having never been able in her whole lifetime to fulfil the condition (Herodotus *ed.*, *cit.* 1-3, 100). When Darius invaded Scythia the Sauromatæ sided with the Scyths (*id.* 101), and formed a section of their army (102). The Persians traversed the land of the Sauromatæ and entered that of the Budini beyond (*id.* 103). Not long after Herodotus, namely in 390 B.C., or according to Niehbuhr, in 360 B.C., Scylax mentions Syrmati, on the west of the Tanais, and Sauromatæ, on the east of it. The two are clearly merely forms of the same name.

Eudoxus (379 B.C.), as reported by Stephen of Byzantium, also names Syrmatai, west of the Don (Schafarik, i. 336; see also Niehbuhr, "Researches into the Hist. of the Scythians, &c.," 48, where the passage is amended). The next author who names them is Ephorus, who lived about 355 B.C. He is quoted by Strabo as saying "that there is a great difference of life both among the Sauromatæ and the other Scythians, for while some of them are exceedingly morose, and are indeed cannibals, others abstain even from the flesh of animals. Other historians, he observes, descant upon their ferocity, knowing that the terrible and the wonderful always excite attention, but they ought also to relate the better features of these people, and point to them as a pattern; for his part, he says, he will speak of those who excel in the justness of their actions," &c. (Strabo, vii. ch. 9). The work, entitled "*De ære, aqua, locis*," &c., which goes under the name of Hippocrates, and is a narrative probably contemporary with Scylax, or even earlier, mentions the Sauromatæ, the warlike character of their women, and that they lived on the Don among the Scythians (Schafarik, i. 336).

Polyænus, a writer of the second century, A.D., who drew

his materials from good sources, mentions that the Bosporean king, Satyros, probably the second of the name (who reigned 349 to 311 B.C.), persuaded the neighbouring king of the Sindi to put away his wife, who was of the Ixomatai, and to marry his daughter. The injured princess had recourse to the arms of her people, and with their aid revenged herself upon them in several struggles (Schafarik, *op. cit.* 340). Niebuhr tells us that during the wars of the sons of the Bosporean king, Parisades, 311 B.C., the Sauromatæ still lived in their old homes on the Don, which did not yet border on those of the Getæ, being still separated by the Scythians ("Researches into the History of the Scyths," &c.).

The poetical "Periplus of the Euxine," which was written by Seymnus, of Chios, and whose date is not very certain, quotes Demetrius, of Kallatis (a Greek city of the Northern Pontus), as his authority for the Euxine, &c. His narrative is as follows:—

"Near the Scyths is the Palus Mæotis, which took its name from the Mæti. . . . The Tanais forms the boundary of Asia, and divides the continent into two parts. The first inhabitants of its banks are the Sarmatæ, whose land extends for a distance of 2,000 stadia. After the Sarmatæ come the Jaxamatæ, according to Demetrius a Mætic people, but according to Ephorus they were Sauromatæ. It was with these Sauromatæ that the Amazons united when expelled from the banks of the Thermodon. A portion of them have been named Sauromatæ Gynekokratoumenes (V. St. Martin, "Memoirs Historiques sur la Geographie Ancienne du Caucase," &c., 91). The power of the Sauromatæ constantly increased, and when one of the later Scythic kings made an incursion into the land of the Bosporani and the peninsula of Tauris, the Bosporani sought help from the Sauromatic queen, Amala, the wife of Medosacus. She fell with a large force of cavalry upon the camp of the Scythic king, put his son on the throne in his stead, and made him swear to respect the rights of his neighbours (Polyan., viii. c. 56, Schafarik, i. 337).

Sarmatia continued to be the name for the southern steppe land of Russia, with its borders, until a much later period. Sarmatæ occur near Olbia in the time of Dio, and about the Mæotis in the time of Lucian (Gent, *op. cit.* 33). We now find them spreading a long way—we find them in the plains of Pannonia in constant feud with the Romans. The history of these western Sarmatæ we shall continue on another occasion. It will suffice here to say that in Roman times they were divided into two main sections—the Roxolani and Jazyges. In the latter name we assuredly have the same old ethnic title to

which we have frequently referred, namely, Jas or As—another proof that the Sarmatæ and Ossetes were the same folk. By the great invasion of the Huns, which constitutes the Flood, or Chaos, in ethnographical inquiries, the Sarmatæ were finally scattered and separated. But as in the case of nearly all the nomades who inhabited the steppes, and who were driven westwards by fresh invaders from beyond the Volga, the Sarmatæ deposited a section of their body in the *cul de sac*, formed by the Caspian, the Mæotis and Euxine, and the Caucasus. There we meet with Sarmatic gates, while a portion of the Caucasus was called the Sarmatic mountain. But Sarmatæ, according to our own contention, is only an external appellative of a race otherwise known as As or Jas, and it is more to our purpose to know that so early as the days of Ptolemy there were three towns on the borders of the Mæotis whose names were compounded with the particle as; these were Azara, Azabetis, and Azaraba. He also names a tribe of Osilians in the neighbourhood of the modern Azof (V. St. Martin, *op. cit.* 166). While even earlier in the pages of Strabo we find mention of the Aspurgitanoi, *i.e.* the inhabitants of As burgh, or the city of the As, which is word for word the Azof of mediæval and modern writers. It is also word for word the Asgard of the Eddic traditions, the sacred city whence Odin and *Asirs* or *Ases* came, and these *Asira* or *Ases* were surely the same folk as the *Yasses* of our own day, and the *Sarmati* of classical writers—a question which I hope to prosecute in a succeeding paper. This brings the story down to that *hiatus* or blank in our accounts of these regions to which I have previously referred, and which closed with the tenth century, from which date I have already traced the progress of the *Yasses*.

Having traced out the historic continuity of the Sarmatæ and Ossetes, or As, we will now draw attention to some corroborating facts that support our contention. The indigenous name of the Ossetes is well known to be Iron, and that of their country Ironistan; but Iran is the indigenous name of Persia and Media, it is so called in the coins of the Sassanid dynasty, whose kings style themselves on them, *Malka Malkani Irân*—king of kings of Iran; and on the inscriptions of the same dynasty at Nakshi Rostam and Kirmanshah, there are the words *Malka Irân wa Anirân*, King of Iran and Aniran (Klaproth, "*Asia Polyglotta*," 83). Again, in Herodotus we find the following passage:—"The Medes had exactly the same equipment as the Persians; and indeed the dress common to both is not so much Persian as Median. They had for commander Tigranes, of the race of the Achæmenids. These Medes were called anciently by all people Arians" (Her., Raw. trans., iv. 61).

In regard to their physique, customs, &c., the Ossetes are remarkably different from the other tribes of the Caucasus, they are more like Europeans. Blue eyes and light and red hair are frequent among them, and there are few who have really black hair ("Tableau Historique du Caucase," by Klaproth, p. 70). But it is in their language that the Medic origin of the Ossetes is best shown. Klaproth compared a long vocabulary of Ossetic with Persian and other allied languages in the "Asia Polyglotta," and his researches were followed up by Sjogren, who has made an elaborate examination of the language, and amply confirmed the conclusions of Klaproth that it is an Arian tongue, most nearly allied to that of the old Persians and Medes, and having in it besides a barbarous element, which is perhaps Scythic, for, as Diodorus tells us, the Sarmatæ were compounded of the Medes and Scyths, and Herodotus expressly tells us that the Sarmatæ spoke the language of Scythia, but not perfectly.

We have still other evidence. The chief rivers of Ossetia are the Arrdon, Ursdon, Dugor, Pog, Ksani, &c. In the two former we have the particle don, the root of Tanais, the ancient name of the Don *par excellence*, of Danaper or Dnieper, and Danastris or Dniester, which were the great rivers of Sarmatia. Now don or dun is Ossetic for river to this day, Pog is assuredly the same name as the Bug of South-western Russia, and we further find that such Sarmatic names and words as have come down to us have their affinities in Ossetic and its sister dialects of Persia and Media. Thus—I am chiefly quoting Schafarik—the Sarmatian names Arsaces, Ataces, Badaces, Vadapaces, Pharnaces, Spadaces, Dadaces, Medosaces, are the same in form as the Persian and Medic Arbaces, Arsaces, Basaces, and are compounded of aces, *i.e.* as, and various qualifying particles. Again the Sarmatic names Amnagos, Abragos, Japhagos, Mazagos, Dadagos, Zunagos, Muzunagos, Argunagos, Rechunagos, Tumbagos, Spotagos, Aluthagos compounded with ages or agos may be compared with the similar names Astyages, Harpagas, &c., found among the Medes and Persians. Again, the Sarmatic Ariopharnes, Sætapharnes, Usafer, Sinafer, are, equally with the Medic and Persian Dataphernes, Tissaphernes, compounded with pharnes or far, which is, in fact, the word for splendour, majesty, &c. In the first of the names quoted it will be noted that the qualifying particle is aris, *i.e.*, Arian, and this in a Sarmatic name. In Zend Aspehes, and in Persian asp, esp, is a horn, whence the Persian names Astaspes, Sataspes, Zariaspes, Hystaspes, whence also the Sarmatic name Banadaspus. Sarmatic Bages is the Persian Bagæos; Sarmatic Pharzeos the Persian Pharsiris (probably from fars, land, country). Sarmatic

Abragas is Persian Abradates, Abrocomas, &c., &c. (Schafarik, "Slavische Alterthumer," i. 366).

I shall not now refer to the words contained in Böck's "Corpus Inscriptionum," which may be better discussed when, in a future paper, I, with your permission, examine into the affinities of the Scyths. At present it will suffice to have brought together the foregoing facts, which go far, I think, to support the conclusions partially drawn by Schafarik, V. St. Martin, and others, that the Ossetes of the Caucasus are the descendants of the Sauromatæ or Sarmati of classical writers.

In the discussion which followed, Mr. BOUVERIE PUSEY, Mr. JEREMIAH, and Mr. PARK HARRISON took part, and Mr. HOWORTH replied.

A paper, entitled "The Pelagosa Finds," being a translation by Captain RICHARD BURTON of two letters from H.B.M.'s Vice-Consul, Signor Toppich, of Lissa, was then read by Captain DILLON, in the absence of the author and translator.

The publication of it is postponed pending the arrival of certain illustrations promised.

After some remarks from the PRESIDENT, the meeting separated.

MARCH 28TH, 1876.

Colonel LANE FOX, *President, in the Chair.*

The minutes of the previous meeting were read and confirmed.

The election of ROBERT SWINTON, Esq., was announced.

The following list of presents was announced, and thanks were voted to the respective donors:—

FOR THE LIBRARY.

From the SOCIETY.—Jahrbuch der K. K. Geologischen Reichsanstalt. Vol. XXV. Nos. 7-17, 1875; Verhandlungen, Ditto. Nos. 12-18, 1875.

From the SOCIETY.—Mittheilungen der Anthropologischen Gesellschaft in Wien. Vol. V. No. 1.

From the EDITOR.—Revue Scientifique, 38 and 39, 1876.

From the SOCIETY.—Journal of the Asiatic Society of Bengal. Part I. No. 3—Part II. Nos. 2 and 3; Proceedings, Ditto. No. 9, Nov., 1875.

From the IMPERIAL ACADEMY OF SCIENCES, VIENNA.—Sitzungs-berichte Philoshistor : Classe 78 Band, Heft 2 and 3 ; 79 B. H. 1, 2, and 3 ; 80 B. H. 1, 2, and 3 ; Math-naturw Classe, 1874 ; I., II., and III. Abtheil, Nos. 8-10, 1875 ; I. and II. Abtheil, Nos. 1-5 ; III. Abtheil, Nos. 1 and 2 ; Almanach, 1875.

From the SOCIETY.—Proceedings of the Royal Society. Vol. XXIV No. 167.

From the SOCIETY.—Proceedings of the American Philosophical Society. Vol. XIV. No. 95.

From the EDITOR.—Nature (to date).

A collection of Flint Implements and Arrow-heads from Ditchley, Oxfordshire, was exhibited by Captain DILLON.

The following paper was read by the author :

REMARKS ON JAPANESE MYTHOLOGY. By EDWARD B. TYLOR.

A JAPANESE gentleman, resident in London, Mr. Tatui Baba, has, at my request, translated the opening part of the Ko-zi-ki, an important collection of Japanese annals, so far as I know, not accessible in any European language. The latter part of this work, which constitutes its main contents, is of a historical nature ; but the introductory part consists of legends of the Creation and other episodes, in which divinities take part, and it is to these legendary episodes that the following brief remarks relate. I have drawn also from Siebold's "Nippon," and Klaproth's introduction to Titsingh's "Annales des Empereurs du Japon."

It is evident at the first glance over the collected materials of Japanese tradition that the following three principal elements have contributed to them :—

1. The introduction of Buddhism into Japan has caused the reception of a mass of well-known Buddhist legends, which may be here set aside without further notice, the object of the present paper being to bring into view only what is distinctively Japanese.

2. Though the indigenes of Japan were of a race different, physically and philologically, from the Chinese, these latter have migrated into Japan in large numbers within historical times ; and in fact Japanese culture is largely of Chinese origin, or developed under Chinese influence. As might be expected, this Chinese influence is well-marked in Japanese mythology. Thus, the legend of the Creation starts with an original chaos, in which the female and male elements, the *me* and *o* (Chinese *yn* and *yang*), were not yet separated ; but water, air, and earth were mingled, like the yolk and white of an egg mixed up, till

matter divided itself by the heavy parts sinking to form the earth, while the light parts rose and became the heaven. The Chinese origin of all this is evident: and, again, the Japanese first man, Pan-ko-si, is obviously the Chinese Pwan-ku. These Chinese elements in Japanese tradition may also be set aside.

3. After thus eliminating the two classes of borrowed legends there is left what appears to be a genuine Japanese stratum, containing nature-myths of a very clearly marked character. Thus, in the narrative of the Creation, while the earth is still soft like mud, or like oil floating on the surface of water, there arises out of the mass the flag or rush called *asi* (*Erianthus japonicus*), from which there springs the Land-forming god (Kuni-soko-tatsino-mikoto). After him arise the god and goddess whose functions are the baking of mud-earth and the baking of sand-earth. As the rush or flag in question grows thickly in marshy places round the Japanese coast, we have here stated in mythological language the geological process of the formation and solidifying of new ground. One of the next proceedings is the production of the islands by the god Iza-na-gi, and the goddess Iza-na-mi, who stand on the heaven-bridge and dip a spear in the muddy waters; the drops from the spear form an island (or several). This is followed by the story of the loves of this divine pair, the male and female spirit, who descend on this island and meet near the imperial column with mutual expressions of admiration. But the goddess, by speaking first, gives an evil presage, and the first child born to them is accordingly set adrift in an ark of reeds. This episode of the setting adrift of a divine or heroic infant, which is found in the traditions of so many races, is noticeable as occurring in Japan.

The Sun-goddess, Ama-terasu-oo-kami, the heaven-enlightening Great Spirit, Ten-shu-dai-sin, is the heroine of several episodes, whose purely nature-descriptive character is evident. She is sent up to heaven to govern all things, and with her is her sister, Tsuki-no-kami, the Moon-goddess. Their brother is a god named Susanno-ono-mikoto, whom, even if the Japanese commentators did not recognise him as the God of Winds, we should see to be such by his description; he is gentle and mild, always with tears in his eyes, but if opposed becomes furious, tearing down everything, uprooting the trees and setting fire to the forests. Therefore his parents order him down to Hades, but he is allowed to visit first his sisters the Sun and Moon in heaven. So he rushes up to the sky, to the terror of the Sun-goddess, Ten-shu-dai-sin. When she sows the earth in spring he scatters and tramples the paths, and at harvest-time he drives

the rain and hail into the fields to destroy the crops. His unruly and offensive conduct at last drives his sister to take refuge in a cavern in the sky; closing the opening with a great stone, she thus leaves the world in darkness. Distressed at this, the 800,000 gods devise means to bring her out; they light a great fire outside, and set a goddess to dance ridiculously, with other joyous proceedings, setting birds to sing, and hanging up jewels, peculiarly cut pieces of paper, and a sacred mirror. The Sun-goddess, wondering that music and dancing should still go on, although she has darkened the world, pushes the great stone a little on one side and peeps out; then the god stationed on guard pushes it on one side and pulls the Sun-goddess out, and they stretch a cord across to prevent her from getting in again. Thus she is appeased, and the Wind-god is sent down below. The scene of the Sun hiding herself is now in the legend transferred to earth, and the very cave is shown; but it is evident that we have really here, in a very clear and perfect form, the nature-myth of the Sun driven into hiding by the storm and peeping out from her cloud-cave, when presently the great cloud is rolled away like a rock from a cave's mouth. Following out the same course of ideas, we read of the Wind-god descending to earth and slaying the eight-headed and eight-tailed serpent, who is about to destroy the "lady of the young rice field." The monster is known to the Japanese as being an eight-mouthed river, so the story seems really that of the wind and the flood.

Beside the main themes of these nature-legends, there occur, here and there, special episodes, and mention of ideas and customs of considerable interest. For example, when the god Iza-na-gi goes down to Hades to visit his wife, Iza-na-mi, to induce her to return to him, she replies, "Alas! thou art too late, I have already eaten the food of this world." We have here the interesting conception (which also occurs with great definiteness in New Zealand) that none can return from Hades who has once eaten of the food of the departed spirits. Again, the mention of the Sun-goddess being enticed out of her cave by the mirror to see herself in, and the pieces of cut paper, belongs to a special characteristic of Japanese worship. We have here evidently the mirror and the cut papers (*go-hei*) with which the Shin-to or Kami temples of Japan are furnished. (Mr. Franks mentions to me the interesting fact that these *go-hei* are used by the Ainos in their festivals, a point which bears on the problem of the relation of the Ainos to the original Japanese.)

It is obvious from the samples I have given that Japanese mythology, when cleared of Buddhist and Chinese elements,

contains nature-legend of value, and also episodes which may help to throw light on other branches of mythology and religion. I have intentionally avoided any full going into the subject, which can only be done by collating the whole set of documents with the aid of native Japanese scholars.

DISCUSSION.

Mr. TATUI BABA—Mr. Chairman and Gentlemen, I am sorry to say that I cannot speak the English language so as to express myself clearly and distinctly. However, being asked so kindly by you, sir, I hope I may be permitted to make a remark or two on the subject. I have to express my best thanks to Mr. E. B. Tylor for bringing this subject before this learned society in a very interesting and able manner. As to the translation which I did, I must say it is a very imperfect one. I had great difficulty in translating that book, not only because I have an insufficient knowledge of the English language, but also because there are some commentators who differ very much as to the meaning of the words mentioned in "Roziki." Besides, the eight-necked serpent called Orochi, and killed by Susanō, is said to be a man who came from the place of that name and not a monster, for that heavenly bridge mentioned in the book is said to be a ship. But I translated it as literally as possible. Till recently there were castes in Japan. They were abolished three years ago; but while they existed the people of the higher caste eat the food cooked in their own fire, because they said they must not "mix fire," and if they did so they would belong to the lower caste. In Japan these castes had nothing to do with religion, and there was no such thing as excommunication. Only if any one did "mix fire" he was looked on as not respectable, and would be disliked but not excommunicated. There are many customs which may be traced in the same way.

Mr. MONCURE CONWAY said—I have been exceedingly interested in the important statements made by Mr. Tylor, and by my friend Mr. Tatui Baba. It has seemed to me in studying Japanese religion that there are various indications of some early intercourse with the Aryan races. It is not only in the resemblance of the idea of the food of the under world preventing, if eaten, the return to life, to the story of Proserpine eating the fatal pomegranate seed that we see this. One of the Vedic descriptions of Brahma speaks of the sun and moon as his two eyes, and there is a very early Japanese myth which relates that the sun and moon were left when a deity bathed his eyes in the primal sea. But I attach still more importance to the fine hero and serpent myth of that country, told of the prince after whom Japan was named. The monster had eight heads instead of the hydra's seven, but in every other respect was a veritable hydra, or water snake. The kami or mirror is mysterious; it is said by Japanese scholars and rationalists to be the symbol of self-examination. Each worshipper on entering the temple immediately repairs to it as his confessional, and after-

wards at once passes for meditation and devotion to the curious pyramid-shaped figure, made of bits of paper. I believe these pieces of paper are diamond-shaped, and I should like very much to hear from Mr. Tylor or Mr. Baba more concerning their significance.

Mr. LEWIS said that it was a common belief that anyone visiting the fairies would be unable to return to ordinary human life if he partook of any of the fairy food, which was generally horseflesh or offal, though presenting by enchantment a beautiful appearance. Many details of this kind had been collected by Sir Walter Scott and embodied in the notes to his novels and poems. In "Redgauntlet" he went even nearer to the Japanese notion, as he conducted one of his characters to the lower regions, where he was warned by a deceased friend to "to tak naething frae onybody here, neither meat, drink, or siller, except just the receipt that is your ain." Of course this was a modern tale, but Sir Walter was more likely to have got the notion from a North British than from a Japanese or New Zealand source. In reference to Mr. Charlesworth's remarks, he would say that they must not conclude that because an occurrence was mentioned in a mythical legend no occurrence of the kind could be historical. For instance, Mr. Tylor had found in Japanese mythology an instance of an infant being turned adrift in an ark of reeds; but not to mention Moses, one of the ancient Assyrian kings stated in an inscription that he himself had been so treated. He was not, however, sure that this statement had been accepted by Assyriologists.

Mr. HYDE CLARKE said that any similarities between Japanese and other mythologies must be sought, not in a communication in later times to or from Japan, but to the participation in common of prehistoric myths in descent. In the Japanese language there were many words which could be found in Africa, attesting the share of the Japanese in the general inheritance. The origin of mythology was to be found in early language, where several words were appropriated to one idea and several ideas to one word. In time selections took place, and afterwards the original meaning or application of the words was forgotten and new interpretations were placed on them.

Mr. BOUVERIE PUSEY, the PRESIDENT, and others took part in the discussion, and

Mr. TYLOR, in reply, said that the episode of the hero being set adrift was by no means necessarily mythic, as the custom of so exposing children was known to many countries. At the same time, from its picturesque character, it is often incorporated in mythic legends. With regard to ideas as to mortals eating the food of the departed souls not being allowed to return, he admitted the similarity of the superstition mentioned as to fairies' food and as to the pomegranate seeds eaten by Proserpine, but considered the New Zealand myth to correspond most exactly to the Japanese

notion. As to the meaning of the mirror in Japanese temples, it was true that the Buddhists considered the sacred mirror to symbolise self-examination, &c., but in Japan there is no doubt that its original meaning was that of an image of the sun, much as a polished gold disc was set up in the ancient Sun temple of Cuzco in Peru.

The following paper was read by the author :

On the term "RELIGION" as used in ANTHROPOLOGY. By W. L. DISTANT.

IN the interest of anthropology, it will, sooner or later, become necessary to form a synonymic catalogue of anthropological facts; in other words, to discriminate among the many physical and psychical phenomena recorded by actual observers and others as appertaining to primitive and little known races and varieties of mankind. Not but what we must own that the desire for exactitude is in general clear and unmistakable in the descriptions received from different observers of the same people, however divergent as to particular points these statements may be found. It however becomes necessary, before recording a reputed peculiarity either in belief, manners, customs, or physical conformity, over and above such as is vouched for by data, commensurate with the usual requirements of scientific research, to estimate the method of inquiry made, and the qualifications possessed by the observer, to arrive at a successful result. Thus we require to know the opportunity and time available for observation, the method pursued, the tact, experience, and, more particularly, the bias in the mind of the inquiring observer. The reticence of most savages (to use an inappropriate word for want of a better one) to impart information as to their beliefs and customs, and the extreme difficulty of questioning them on the same, either in a manner not calculated to give offence, or sufficiently clear to elicit the truth, often so formidable as to overcome the efforts of a careful and painstaking inquirer; whilst by duplicity, or a misunderstanding of terms completely unreliable or illusory, information is frequently acquired. Thus we have heard of the same people as possessing a religion and as having none whatever, of being addicted to cannibalism and as never practising it, of being ferocious and bloodthirsty and as harmless and friendly, except under provocation. And as anthropology is a popular science, and these statements are quoted by essayists and writers on social and religious subjects, sometimes to prove one thing and sometimes another, the need becomes greater that a careful analysis should be made similar to that selection

which eventually ensues in zoology in discriminating what shall be considered as a distinct and well marked species. The controversy incidental to the propagation of new scientific theories and generalisations is in anthropology frequently obscured by the array of quotations from different travellers to prove different views on the same question, as is constantly seen in the arguments for the progress or degeneration of man; whilst research among the records of the less qualified travellers usually lands the inquirer in the quicksand of apparent contradiction or meagre information, from which it is as easy to prove one thing as another. Tradition seems the most unreliable, and it is somewhat difficult to know when we are dealing with that or with actual observation. Thus traders frequently give most uncomplimentary accounts of the races who will not trade with them; missionaries, again, of those who will not receive them; and these statements in time become looked upon as verified facts. Of course we must not forget that the habits, customs, and beliefs of a primitive race alter in a speedy and remarkable manner after contact with a more advanced people, as we may prove by comparing the narratives of the old voyagers with those of recent travellers when describing the same races; but, making the fullest allowance for these necessary discrepancies, there still remains a residuum of somewhat irreconcilable information.

As an instance of the discrepancies to which we have alluded, in two recent and popular works we find the following somewhat discordant statements. Dr. Schweinfurth, in discussing whether the belief in immortality is indigenous to Africa, says: "At any rate, those statements are incorrect which would endeavour to explain the dull resignation displayed by the victims of human sacrifices in Dahomy by a theory of their belief in immortality.* That this belief in immortality, however, exists, is distinctly told us by Mr. J. A. Skertchly, who spent some time at the Court of the King of Dahomy, and witnessed the annual customs or sacrifices. To use his own words, the Dahomans believe that after death a person exists in the other world in a rank similar to that occupied by the deceased before death. Consequently, it is necessary to supply the dead monarchs with slaves; besides which the continual sending of messengers to them by their successors in this world keeps the departed sovereigns in a happy state of mind as to whether their greatness is forgotten on earth, &c.; † which merely reiterates what Captain Burton had told us before. ‡ Livingstone

* "Heart of Africa," vol. i. pp. 304-5.

† "Dahomy as it is," pp. 180, 181.

‡ "Dahome," vol. ii. p. 25.

should certainly be our greatest authority upon this question, for in him the missionary was combined with the explorer, and he seemed to have considered the problem of the Africans' religious beliefs as worthy of investigation as the sources of the Nile. It is from him that we may expect information on these points which has not been gathered by the geographer or naturalist alone, and its import to a profoundly religious mind like his own must have appeared more deeply significant than as a mere query of ethnology. Yet we learn that even in the same district there are somewhat contradictory accounts as to an indigenous belief in immortality. Thus at Marenga's town, on the west shore of Lake Nyassa, the men said their fathers had never told them aught about the soul, but they thought that the whole man rotted and came to nothing.* A short distance from here, however, Livingstone has a different experience: "Six men slaves were singing, as if they did not feel the weight of their slave-sticks. I asked the cause of their mirth, and was told that they rejoiced at the idea of coming back after death and haunting and killing those who had sold them."†

There seems to be scarcely a doubt that there can be as many psychological states and beliefs of an undeveloped mind as there are different racial types of one stock, and this, no doubt, applies to Central Africa, and is shown in these two recorded instances of belief and non-belief in immortality, as given by Livingstone. Of the total disbelief in immortality, Sir Samuel Baker gives a good instance in his conversation with Commoro. He endeavoured to prove to that sturdy African the doctrine of another existence by the metaphor of St. Paul with a grain of corn. Commoro replied: "Exactly so; that I understand. But the original grain does not rise again, it rots like the dead man, and is ended; the fruit produced is not the same grain that we buried, but the production of that grain. So it is with man. I die, and decay, and am ended; but my children grow up, like the fruit of the grain. Some men have no children, and some grains perish without fruit; then all are ended."

This is neither hearsay nor report gathered by travellers, nor the mere judgment expressed on a hasty remark which may have been made by a negro follower. For the affirmative, however, we have the testimony of Mr. Winwood Reade, whose travels were principally confined to

* "*Livingstone's Last Journals*," vol. i. p. 114.

† *Ibid.*, vol. i. p. 306.

the western portion of Africa, and who found that all the African tribes he met believed that the ghosts or souls of the departed hover round the graves and their former homes, and that the natives of the Gold Coast believe that there is an Unterwelt, or Shadow Land, beneath the ground, to which the soul migrates as soon as life is extinguished. The spirit then resumes the rank which it had upon the earth.* In thus confining the illustrations to Africa alone, we see how in one continent, which has the advantage for our researches of being in what we call a savage or primitive condition, the most divergent evidence can be found for the existence or non-existence of a belief in immortality. Of course the want of this belief cannot be considered as disposing of the question whether religion or a belief in a God or Gods is ever totally absent from man, however primitive or degraded. For it is quite possible to believe in the existence of God without having a faith in immortality, and, as enunciated by a celebrated abstract thinker, to possess a religion without a belief in a God.

That this question is essentially an anthropological one is evident, from the way in which it is discussed by all writers on man's development, either physically, mentally, or socially; and perhaps one result of the somewhat conflicting statements to which we have alluded in a few instances only, may be found in the different verdicts given by some of our most eminent anthropologists. Sir John Lubbock is very strong on the negative side, and the result of his inquiries has shown him that sailors, traders, and philosophers, Roman Catholic priests and Protestant missionaries, in ancient and in modern times, in every part of the globe, have concurred in stating that there are races of men altogether devoid of religion. And the case was the stronger because, in several instances, the fact had greatly surprised the traveller who recorded it, and had been entirely in opposition to all his preconceived views.† Mr. Tylor, however, is much more cautious on this point, and considers that "the assertion that rude non-religious tribes have been known in actual existence, though in theory possible, and, perhaps, in fact true, does not at present rest on that sufficient proof which, for an exceptional state of things, we are entitled to demand.‡ And this seems certainly well shown by the instances which he then gives of travellers actually contradicting themselves, unknowingly, upon the point, and who, he states, "seem hardly to have recognised anything short of the

* "African Sketch Book," vol. ii. p. 129.

† "Origin of Civilisation," 3rd edition, p. 201.

‡ "Primitive Culture," vol. i. p. 378.

organised and established theology of the higher races as being religion at all."*

These differences of view seem, however, to have another cause than the want of reliable data from qualified travellers, and this cause as intimately affects the traveller himself as the philosopher who studies his reports. What constitutes a religion, and what shall be considered worthy of that name? Is there a primeval germ that has given birth to all the great religious institutions of the world? And if so, how shall we recognise it? Is it a craving inherent in man to explain what is mysterious—an equivalent to that universal psychological condition which endeavours to formulate the unknowable? A doubt as to the strict definition of the word seems to be latent in all writings on the subject. Sir John Lubbock, at the commencement of his chapter on Religion, remarks that he felt doubtful whether he should not have used the word "superstition" rather than the term "religion" of savages.† And, speaking of the Australians as not believing in the existence of a Deity, he also tells us that "morality is not in any way connected with their religion, if such it can be called."‡ I do not know whether Sir John Lubbock would make morality a test of religion, but we must remember that morality—really the science of man's duties—is in constant unison with the knowledge of the age; that in all religions men of strictest faith look back upon certain episodes in the records of those religions which, judged by current standards of morality, must perforce be styled immoral. If this is so, looking back in primitive time by the light of the fossilised primitive races of the present day, where duty is simply existence, and the necessity of the wants of that existence being satisfied, where the doctrine of self reigns supreme, because a society has not arisen with its benefits bestowed for services rendered, we shall certainly find here the smallest crumb of morality, though we may come across a loaf of superstition. But, bringing the word into our nineteenth century "civilisation," the question as to what shall be considered the union of religion and morality still remains unanswered, as may be witnessed by our School Board debates. Till we have solved this difficulty among ourselves, may it not be as well to postpone our verdict as to whether a rough, uncultured, undeveloped, primitive race possesses no religion because that religion possesses no morality. A reference to Mr. Spencer's "*Descriptive Sociology*" will show how slowly, even in this country, morality was influenced by either religion

* "*Primitive Culture*," vol. i. p. 379.

† "*Origin of Civilisation*," 3rd edition, p. 195.

‡ *Ibid.*, p. 312.

or culture. To take a selection from that work (Part i. Table ii.), and as it stands in chronological order, we find that :

By end of seventh century whole Church a single organisation, irrespective of divisions of kingdoms. Had synods, in which minor ecclesiastical affairs settled. Witenagemot made ecclesiastical as civil laws. Bishops appointed by king and Witan, independent of Pope (though many Roman forms adopted), and Pope not allowed to overrule appointments. Liturgies, ritual, and prayers in English.	Progress of ecclesiastical domination in Sunday observance. Labour forbidden; then amusements and relaxations restricted; then number of hours held sacred increased.	In 8th century a labouring man was held disgraced if he could not sing to the harp.	Increase of gross vices; long and late carousing; open concubinage; increase of treachery, &c., &c.
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Mr. Tylor—and who should be a better judge—with his immense collection of anthropological facts, thinks it best, as a minimum definition of religion, to style it “the belief in spiritual beings.”* This would clearly make it difficult indeed to find a non-religious people; but if religion is to be used by the comparative psychologist or sociologist as a test of the evolution of culture, shall we not have the greatest difficulty in settling the spiritual beings in which it shall be considered as rational to believe? Take only, for instance, among ourselves the divergent opinions on this subject held by three schools, each containing some of our most eminent men. I allude to the teachings of science, the teachings of Rome, and the teachings of spiritualism. In these three schools combined could be found, I venture to think, the religious concepts of the world, if we accept the definition, “a belief in spiritual beings.”

Again, Mr. Darwin truly remarks that “there is no evidence that man was aboriginally endowed with the ennobling belief in the existence of an omnipotent God.† But, on the other hand, there is evidence that in all ages, and in all stages of culture, there have been most highly intellectual and cultured men who were not endowed with that belief. Not only do we see this in the teachings of the Manicheans of the third century, but in Mr. Mill’s last posthumous work we find that he was of opinion that “those who have been strengthened in goodness by relying on the sympathising support of a powerful and good Governor of the world, had, he was satisfied, never really believed that Governor to be, in the strict sense of the term, omnipotent. They had always saved his goodness at the expense of his

* “Primitive Culture,” vol. i. p. 383.

† “Descent of Man,” 2nd edition, p. 93.

power.* And thus, though undoubtedly, as Mr. Darwin states, aboriginal man was not endowed with a belief in the existence of an omnipotent God, we still find the same belief absent in ages and minds far removed from the early dawn of rational thought.†

If we leave anthropologists, who have dealt with the subject, and approach other writers on the same, we shall find much less sign of an universal definition. Lord Lyttleton thus expresses himself on the point: "Religion, I take it, can be sufficiently defined in a general way, or at least in one aspect, as some positive and palpable belief in, or expectation of, a life to come after this. The Nirvana of Buddhism—a belief in future annihilation—is not a religion; it is the denial, the contradictory of all religion."‡ I may, perhaps, venture to deny that anthropologists are prepared to accept this dictum. Should such a course be taken the difficulty would be increased; stern logic would demand a treatment of the early Jews, which is not usually given in theological literature.

A recent writer on natural religion considers that man to believe in a God who feels himself in the presence of a power apart from and immeasurably above his own.§ But this experience by some is not considered as confined to man alone. As an instance of this, in a paper by the Rev. F. W. Farrar,|| referred to by Mr. Darwin in his "Descent of Man," we are told that "a vague fear of the unknown is found even among animals, and is widely different from the belief in a God;" and, again, that "all races, probably, have a fear of the unknown." Another phase of the problem appears in the fact that there is no superstitious, religious, or animistic code of ideas which is either totally confined to a primitive age, or which does not appear in some form in times and centres of what we term high civilisation. The broad waters of animism percolate everywhere the soil of humanity, flowing freely through the regions of savagedom, and bubbling up in innumerable springs throughout the length and breadth of the most cultured areas. Psychology has yet to tell us to what extent a survival of superstitions may be synchronous with a high state of mental culture; the exact laws which govern spiritualistic beliefs, and the nature and cause of the ideas which formulate them. We must also study the different aspects of animistic and religious thought, as held by the educated and the ignorant, the rich and the very poor,

* "Three Essays on Religion," p. 39.

† See also Oscar Schmidt, "Doctrine of Descent and Darwinism," p. 302.

‡ *Contemporary Review*, vol. xxiv. p. 655.

§ *Macmillan's Magazine*, vol. xxxi. p. 365.

|| *Anthropological Review*, August, 1864, p. ccxvii.

the healthy and vigorous, and the weak and diseased; the changes effected by foreign ideas, and the rites and customs of other creeds; the results of the positive teachings of science; advances in the stages of public opinion; reflex action of politics, such as an era of Liberalism or a period of Conservative legislation. It may be the most crass obtuseness, but to the mind of the writer religious views have never proved a test of civilisation. Sir John Lubbock, in his bold and vigorous classification of early religions, considers the first great stage to be a state which does not imply a denial of the existence of a Deity, but an absence of any definite ideas on the subject.* Might not this be called Agnosticism? Our great thinker, Mr. Spencer, has thus expressed himself upon the subject: "The religious sentiment may find its highest sphere in the belief that the ultimate Power is no more representable in terms of human consciousness than human consciousness is representable in terms of a plant's function."† With this may also be compared the latest utterances of Mr. Matthew Arnold.

The "Anthropological Notes and Queries," framed by the leaders of this Institute, will now enable the traveller who will use them to give us reliable information, and, no doubt, one day from the seed contained in that little volume will be reaped a plentiful harvest of truly scientific anthropological researches. But in the meantime "of making books there is no end," and religion will be still made to play the part of test in regions of comparative psychology and anthropology.

If, therefore, the term religion is so undefinable in the minds of most thinkers, must it not necessarily be an inexact word as used in our science? And, as it is often made a psychological condition of which, and from which, we may estimate a people's condition and a society's development, is there not danger in letting such great issues depend upon a misunderstood or little understood term? We must either treat it theologically or scientifically. If in the first manner, it had better be left to the use of theologians. But, if we look at it in a scientific light, perhaps the utmost we can say in definition of a religion is that it is a rule of life. A very primitive people may have a rule of life which is very opposed to our own. Revenge may be looked upon as a duty, and gross vices as pleasures; as a correlative, the creed, if such is acknowledged, will be in unison with such a mode of thought and such a social condition. But without we trespass on the domains of theology, and thus acquire an *odium theologicum* as well as an *odium anthropologicum*,

* "Origin of Civilisation," 3rd edition, p. 198.

† *Contemporary Review*, vol. xx. pp. 153-4.

we can only estimate a national religion by the standard of a national character; and this, I need scarcely remark, is not the usually accepted definition. I would therefore respectfully ask anthropologists whether it might not be better to discard the use of the term Religion in anthropological discussions altogether as being an undefined term, and as such not admissible in science. It can be no offence to theology to leave its subject-matter solely to itself, science reserving the like claims on its own behalf. That the study of anthropology would gain thereby is, I think, scarcely doubtful. In our ethnological inquiries we are dependent upon the descriptions of travellers. Should the term "religion" be mentioned, it is a theological, not what is called a scientific expression, for science has as yet not used the word in any one particular and unchanging sense. It is opening afresh the everlasting argument as to civilisation and religion; the interdependence of the two and the question which is to be called cause and which effect. The development of man from something worse is gradually being established as a fact, and his capability of development to something better is slowly becoming a creed under the advancement of scientific conceptions. May it not be as well, in furtherance of such a cause, and in the true spirit of science, either to give the word "religion" some universal definition, cease to use it altogether, or in its place to substitute a term alike capable of being conceived and incapable of being misunderstood.

DISCUSSION.

MR. TYLOR pointed out that theology and morals are not only theoretically separable, but among many nations are found actually separate, theological doctrine and worship existing without reference to human conduct, and morality existing under social sanctions, but without reference to the deities, who are not supposed to concern themselves with man's behaviour to his neighbours. He considered that theology should describe doctrines relating to spiritual beings, while morals should take in the social rules of human conduct, and agreed with Mr. Distant, that the present mode of combining these two subjects under the indiscriminate term of Religion was at present an impediment to correct description in anthropology.

DR. SPRATT said, it was well known that those who are blind can frequently define objects when approaching them. It has been already chronicled and handed down that visions do appear of what is passing before the eyes both at night and in broad daylight, though the only apparent causes be some constitutional predisposition for a given taste, design, or the result of fear. Such powers of the nervous system so influenced, either in the normal or abnormal state, were spoken of by the ancients, but were more or less

looked upon in these days in connection with superstition and a divine and higher power.

Mr. MOGGRIDGE said—I agree with the doubt thrown out by Mr. Distant, at the conclusion of his very able paper, as to the desirableness of religion being admitted as a subject for our discussions here; indeed I thought that it, as well as politics, was excluded by all scientific societies. Some form of religion has, in all ages, generally obtained, with occasionally a few brilliant exceptions. In very early times the adoration of visible objects became frequent—of the sun for instance, and what more natural than the selection of that glorious luminary, the source of light and warmth, essential alike to animate and inanimate nature. The moon, the more brilliant stars, departed heroes, and living animals, were not without their worshippers; but generally there was one God recognised as supreme—the Jupiter of the system. Probably Abraham was the first who endeavoured to get rid of the minor deities, and to concentrate the love and affection of mankind upon the one Supreme. Nearly all religions were accompanied by a belief in a future life; in some cases that belief was vague and uncertain. Even Tacitus, foremost as he was among the more intelligent of the Romans, puts it hypothetically: “*Si quis piorum manibus locus, si, ut sapientibus placet, non cum corpore exstinguuntur magnæ animæ, placide quiescas.*” Far lower in the intellectual scale, but happier in his belief, is the wild savage—

Lo! the poor Indian, whose untutored mind
Sees God in clouds, or hears him in the wind,
His soul proud science never taught to stray
Far as the solar walk or milky way;
But simple nature to his hopes hath given,
Beyond the cloud-capped hill some humbler heaven,
Some better world in depths of woods embraced,
Some happier island in the watery waste.

Thus there has always been a prevailing belief in some all-ruling Power too vast for finite faculties to comprehend, but the object of adoration and love to some, of adoration and fear to others.

Mr. PARK HARRISON said: The term “religion” had certainly a very wide signification, but this was so with the Latin word also, which included “superstition” as well as religion (in its ordinary sense). There did not appear to be any possibility or need of alteration. It was not the province of anthropology to criticise systems of religion; all that could be done was to describe in as accurate a way as possible tenets and ceremonies, and to note the kind of morality that *appeared* to be associated with them.

Mr. JEREMIAH and others took part in the discussion, and

Mr. DISTANT said: The issue raised in my paper is not what religion is supposed to be, but what the term really means when used in anthropology, and to this point I must confine the few remarks I have to make in reply to what has been said on the subject. For purposes of condensation I was compelled to omit many facts and references bearing upon the necessity of some definition over and

above the few which I have given. A paper may thus be either too long or too short. Its length may hide its meaning, and its shortness may not express it. To the objection that my views would exclude the study of the religions of the different races, I can only reply that I have asked for a definition of the term "religion," in order that we may pursue that study on a truly scientific basis. A gentleman has alluded to Professor Max Muller, who is certainly a very high authority, and one whom I can quote for my cause. In his address to the Aryan section of the International Congress of Orientalists, held in 1874, speaking of the difficulty in deciding whether savage tribes had a religion or not, he remarked that he considered the introduction to Mr. Spencer's "First Principles" deeply religious, but could understand that a missionary reporting on a tribe of Spencerian savages might declare that they had no idea of a religion whatever.

The meeting then separated.

ANTHROPOLOGICAL MISCELLANEA.

ON HUMAN HAIR AS A RACE CHARACTER,

Examined by the aid of the Microscope. By Dr. PRUNER-BEY.

Preliminary Observations.

FROM the highest antiquity has the human hair attracted the attention of observers; but, down to a very recent period, it was merely the contour and the external aspect which were taken into consideration. These two characters were thus at all times indicated as distinguishing nations and individuals. The terms *λειότριχες*, *συλότριχες* *ξανθοί*, *πυρροί*, &c., constantly occur in Greek authors and their successors.

Modern science has somewhat enlarged the field of observation as regards colour; but it was only by the use of the microscope that we are enabled to add fresh characters to those accessible to the naked eye. It is by these means that Heusinger was enabled to indicate the elliptic form of the hair of the negro. Koelliker confirmed this observation, and added other characters. Erdl applied the microscope to the study of the colour in animals. Brown finally, according to the tendency of the American school, published in the remarkable work of Schoolcraft, his researches, in which he endeavours to establish specific characters, or nearly so, for the hair of the Aryan, the Negro, the Chinese, and the American, both in the form of the bulb and the body, and also in the structure of the latter, at least as regards the presence or the absence of the so-called medullary canal.

This question has for many years excited my warmest interest. What, an anatomical system at present considered merely as a secretion of the skin, or at any rate as a simple appendage, should this represent clearly defined distinctive characters in the races of man inhabiting the globe? What, a single hair sufficient finally to distinguish one stock from another? At first, this seemed to be absolutely impossible. Nevertheless, on turning our attention to the animal kingdom as a whole, and specially to the vertebrate animals, the variety and importance of these appendages become incontestable at once. In fishes and amphibia they assume the form of scales; that of feathers in birds; and even in certain mammals prickles are substituted for fleece. The felt of wild animals presents some distinct and constant characters in colour, texture, and distribution. In man, excepting some regions, as the face (in the male), the armpits, the pubes, &c., the surface presents generally only the rudiments of the fleece of animals; it is the hair of the head which distinguishes man in this respect.

I do not enter in this paper into the minute or elementary structure of the human hair. In this respect man differs no more from the animal than in the other organic systems, as regards their ultimate elements; hence there can obtain no difference between two human races. But, as we shall presently see, there is a great difference in the conformation of the bulb or the body, as seen in transverse sections; and such there is also in the relative volume, the disposition and the contents of the medullary canal, which may even be absent. These characters can only be studied by the aid of the microscope. I have thought it proper microscopically to examine also the down on different regions of the body in individuals belonging to our race; the apes also, specially the anthropoids, seemed to me to deserve a place in this investigation.

I take this opportunity to return my sincere thanks to those honourable *savants* who have furnished me with samples of hair for microscopic examination. Without the kind aid of Messrs. Quatrefages, E. Rousseau, de Montagu, d'Abbadie, l'Abbé Domeneck, E. Duhouset, and Potteau, this unpretending treatise would probably never have seen the light.

I sincerely regret that, for certain races which inhabited or still inhabit North America and High Asia, I had no materials at hand. I would, however, fain believe that the varied forms of human hair are all represented by the samples I had at my disposal, and that, consequently, those peoples I was compelled to omit may be ranged by the side of such made known in these researches.

II.—*The External Characters of Human Hair as seen by the Naked Eye.*

The hair of the races of man presents, at first sight, very striking peculiarities in regard to its length, abundance, colour, and its smooth, curly, frizzled, crisp, or woolly condition, quite apart from the grotesque forms given to it by artificial practices which are met with both among the most civilised and the most savage peoples. This fact shows the importance which man instinctively and voluntarily has everywhere attached to that ornament which decks his head and frames his face, the noblest parts of his body.

We shall now examine the extreme variation of the characters visible to the naked eye. As regards the length of the hair, what a contrast between the stiff and sleek hair of the Blackfeet and the Sioux,* which almost reaches the heel, and the twisted tufts of the Negress and the Bosjesman, which scarcely reach the shoulder! We must take note, that the length of the hair greatly differs in the two sexes of the same stock; its length also varies so much in the same race, and even in the same families, that it is unnecessary to dwell on this character. We possess, moreover, no certain data in this respect; but, at all events, we must, to some

* The hair of the mummies of the Aymarás of Peru is also distinguished by its length and stiffness.

extent, attribute the peculiarity both to the influence of climate and aliment.

The abundance of hair is subject to so many individual variations, that it cannot form a really distinctive character. As a general rule, the finer and more supple the hair, the greater the number of hairs in a given space. On this point, we need merely to compare the head of the Negro with that of an American.

The colour of the hair has at all times fixed the attention of travellers and authors. On the one hand, it harmonises to a certain degree with the colour of the skin and the iris; and, on the other, it presents more or less persistence, according to race. Black hair is met with in nearly all parts of the globe—under the equator, the pole, as well as in the temperate zone. It is the appanage of the Esquimaux, as well as that of the Negro, the Hindoo, the Malay, and of many European nations. Such is not the case in regard to the other extreme of the chromatic scale; viz. the light hair, with its nearly imperceptible shades between flaxen, straw, and gold colour, to which we must add caroty and fiery red hair. From this last there is a transition to reddish brown, from this to light brown, dark brown, or chestnut, &c. Among these innumerable shades, the light hair belongs to but few races, which chiefly inhabit Europe; such as the Germanic branches, Slaves and Celts of the Aryan stock, and the Finnish branch of the Turanian stock. Some light-haired individuals are found among other peoples; as among the Armenians, who are partly of Aryan origin, the Semitics of Syria, among the Jews, and perhaps in Africa among the Berbers of the Atlas.* The red hair, on the contrary, seems represented, at least by some individuals, in all known races, whether equatorial or boreal. Whilst the red colour forms on the one hand, as it were, a bond of union between the most distinct races, the brown colour may be considered as establishing the transition between the light and the darkest shade. In point of fact, there are, excepting the Negroes, few black-haired races among whom there are not many instances of brown hair, approaching more or less the red. This applies both to the inhabitants of the highest north, as to the Polynesian islanders, to the Americans, as well as to the Turanians, &c.

The inhabitants of Africa, exclusive of the northern coast, present few variations in the colour of the hair. This is also the case in America, where black and brown predominate. Some rare exceptions in Peru and among the Mandans deserve notice. As regards the Peruvians, we have as yet no right to discard the idea of inter-

* Among the Berbers, I have hitherto only found that ash-grey colour which is also met with among other allophyletic nations in Arabia, Egypt, among the Turks, &c. It must, moreover, be borne in mind, that the use of lie-wash, of powders and ointments, produces an artificial colour of the hair. I have seen all kinds of shades, from a fiery red to a silvery white, produced by these means. Just as originally dark hair may become discoloured by such means, so may it, *vice versâ*, appear black, as I found in a wig from the Fiji Islands. A thick black powder encrusted the circumference of each hair, and the original brown colour could only be seen after repeated washings.

mixture; and as to some Mandans with light and silvery hair, living in subterraneous cabins, they always appeared to me to owe that peculiarity to a partial leucosis. Oceania resembles in this respect America, presenting the same colours, and probably less exceptions. It is different in Asia; but there also must the black and brown be considered as the most prevalent colours, excepting on some spots in the high table lands of the Himalaya, and specially in the west of that continent, where the juxtaposition or the intermixture of different races present samples of all shades of hair, as we find in Europe, here and there. It is the Aryan race in its numerous ramifications which inhabits these regions, and which presents, besides all the cranial forms, also all shades in the hair, from the jet black hair of the Hindoo to the pale yellow of the German or the Slavonian.

From what precedes, we arrive at the conclusion that the colour of the hair alone is insufficient to characterise a race; for we have seen that the same colour—black, for instance—is the appanage of almost all the great groups of mankind, and that all shades may be met with in one and the same race. It is this last circumstance which must be taken in account in considering the question whether the colour of hair in a race may change in time and a different climate. Though numerous documents seem to refute the idea of a change, I must ask how we can explain the great variety of colour in the Aryan family, supposed to have descended from one stock; I, moreover, must appeal to daily observation. How many children with fair or reddish hair do not at puberty have it changed into nut-brown! A change in a contrary direction, that is to say, from dark to light (apart from the gradual change to white by age), is rare, though not absolutely impossible. The variegated colour of the hair of an individual, and even in a single hair from the bulb to the point, must not be omitted; nor the different colour of the down covering various parts of the same body.

Characters as important as those of colour are deduced from the stiffness, flexibility, straight or frizzled condition of the hair. The hair is *smooth* when the hairs are rectilinear, *curly* when they curve at the extremity, *frizzled* when they form curves in their whole length, and *crisp* when they are disposed in small or large ringlets resembling wool.

Perfectly smooth hair is the appanage of the Americans, the peoples of High Asia, China, Japan, Malasia, &c. It is less common in Europe, and almost unknown in Africa. Curly hair is more or less found in the Aryan race, among the Semitics, in Polynesia and Australia, and individually also among the races cited above. Frizzled hair is very prevalent in Africa, arising frequently from the commixture of Nigritian blood, as in Egypt, in Abyssinia, amongst the Gallas, &c. It is also sporadically found among the Arabs and the Jews; more rarely among some European Aryans. The crisp hair predominates in Africa among the Negroes, the Hotentots, and in Melanesia.

As regards the latter region we must establish a distinction. Although there are Papuas with very fine hair, separated in tufts, crisp, and approaching that of the Negro and Hottentot, there are others who are "mop-headed," wearing those enormous wigs, of which we possess descriptions and samples, and whose hair is far from presenting the characters of the first variety, as we shall show from microscopic examination. We must here notice that Africa contains peoples possessing similar wigs as the Hadendoas, and that the Cafusos of South America offer another instance of this kind. I have, even in Europe, met with three individuals whose hair had the same aspect; but I had no opportunity of subjecting them to microscopic examination.

The general form which results from the stiffness or flexibility of the hair appeared to me the most striking and persistent character. There is no negro without more or less crisp hair; there is no American without hair like a horse-mane, so to say; no Aryan who possesses either of these characteristic hairs on the head. With such a result, furnished by simple inspection, we ask, what is the cause of this diversity? It is for the microscope to answer the question. It will tell us that these differences result from the thickness and the contours of the hair, apart from the various dispositions which characterise the interior of the body of the hair, which will also be revealed to us by the instrument.

One word on the implantation of the hair on the surface of the integument, before proceeding to microscopic examination. In the great majority of the races of man, the hair issues from its cutaneous envelope in an oblique direction, and the disposition of the hairs and the down presents, according to the regions of the head and the body, the aspect of vortices, eccentric and concentric curves. In the Hottentot, the Papuan, with crisp hair, and in a great portion of Negro peoples, the hair is implanted perpendicularly,* and disposed in large or small round tufts. The Bosjesman presents, as far as I am aware, the smallest tufts.

III.—*General Observations on the Hair examined by the Microscope in a Longitudinal Direction.*

I distinguish, like all anatomists, in each hair the root and the stem. The first consists of the bulb and the papilla. With regard to the shaft, it is not sufficient to examine it at any point in its length; it is requisite separately to examine the base, and specially the point, which presents certain peculiarities. The elements composing the hair are the epithelium, the cortical or fibrous, and the medullary substance.

1. THE ROOT.—The great diversity in aspect exhibited by the hair of different races, leads to the supposition that the root should, if not in structure, at least in conformation, present some notable differences. And, in fact, I have, in the hair belonging to indivi-

* Is this diversity caused by the great thickness of the scalp in the Nigritian races?

duals of different races, found bulbs and roots cylindrical, conical, spindle or club shaped, and others of globular form, or flattened at the base. Contractions and incisions were not wanting. The inferior extremity may be very slender or enlarged, and, in the first case, curved like a hook. I have seen such roots in desiccated hair torn from their follicles.

At the beginning of my researches, I felt inclined to consider the variations in the form of the root as race peculiarities; but, on extending my observations to a number of individuals, I changed my opinion. The reasons why I attach no importance to the form of the bulb are the following. In the first place, I found that individuals of the same race present remarkable differences in the form of the hair-bulb, and, what is more, even the hairs of the same individual show great diversities in this respect. All this may be explained by the metamorphosis of the bulb during its development, and by its gradual atrophy, which accompanies the falling off of the hair. To arrive in this respect at a fair result, we ought to examine the fresh bulbs of sound hair, which I have hitherto had no opportunity of doing.

2. THE SHAFT.—The shaft, when subjected to microscopic examination in the direction of its length, presents differences according to the state of its development. For, before attaining its full growth, the hair passes, so to say, through an embryonic stage; and it is noteworthy that the down is abundantly intermingled with the hair in the polar races, as, for instance, in the Esquimaux and Laps.* In this stage the hair is transparent, having in the above races the appearance of a silvered empty tube; for I have never been able to detect the cellular thread which characterises the hair with a medullary substance. Whenever the point of the hair is finely drawn out, it contains a very transparent central canal. In such cases the transverse partitions gradually disappear on approaching the point; even the hair of the Bosjesman and the American possess this character.† It is rare that the portion of the stem contained in the follicle, though transparent, shows a well-defined canal.

Every hair completely developed, and examined longitudinally by the aid of the microscope, belongs to one of the following classes:—

(a) It presents in its whole tract a central line perfectly diaphanous, with well-defined sides, more or less wide, according to the decreasing or diminishing thickness of the hair. We are

* The same condition is observed in animals of the polar regions, in the polar dog.

† When the point of the hair, not being very fine, terminates in a pencil, the tubes composing it are equally transparent. The same thing is observed in the knots which I have seen on the hair of the inhabitants of the Deccan. These knots are bristling with small transparent and diverging tubes. I am inclined to consider these cylindrical and diaphanous cellules as the primitive element of the cortical substance, which changes its form by the juxtaposition in the mass of the stem.

involuntarily led to consider the silvery portion a canal without medullary substance. I have employed no reagents to assure myself whether it has a cellular structure; I simply describe what I have seen, without engaging in histological researches. I also ignore whether this canal be empty or whether it contains air, a gaseous or oily fluid. I simply confine myself to describe its presence.

(b) In a second class of hair we perceive a cellular canal positively filled, and with less regular margins than in the first class. It is frequently broken off, and we find in its place a transparent gap, without any medullary substance. This is distinguished from the cortical substance by its tint, which is either darker, as a general rule, or lighter, or has a greyish, smoky aspect, specially in white hair. Thus, in black hair, the medullary substance is brownish when visible; in dark brown hair it is reddish or orange colour; it is of a golden yellow in lighter coloured hair, whether perceived in the whole tract of the hair in the form of a full canal, or whether it merely presents more or less elongated cellular clusters, which usually diminish in thickness towards their extremities.

(c) There is a third class of hair which, apart from the cutaneous extremity and the point, presents nothing in the whole tract indicative that the structure of the centre differs from the rest. There are only here and there seen fine whitish lines which might be taken as interstices situated between the elongated or fibrous cellules which constitute the cortical substance.

In reviewing the human races, and distributing them according to the three categories just established, we place in the first category the Aryan family, and specially its branches with light hair. It is only by way of exception that we find the medullary canal empty and silvery in the light hair of some Berbers, Turks, or ancient Egyptians; and in such cases the origin of the individual might be somewhat doubtful. But even in the Aryan race, the presence of a diaphanous canal is not constant. It is found in most Europeans with light hair, as in Germans, Slavonians, Celts, Frenchmen, Italians, &c. In Ireland the presence of a full canal is found in the hair of some light individuals, and the dark-haired European nations also possess, at least in the thick hairs, a distinct medullary substance, whilst the finest hairs of the same head have an empty canal. What, therefore, constitutes the rule in the light hair of the Aryans of Europe occurs in our country as an exception in the dark hair of the same race.*

To the second category belong the greater portion of human races, such as the Esquimaux, the Laps, the Americans in general, the Turanians, the Polynesians, the Australians, &c.

The third class comprises the blackest hair. Thus, the Negro,

* The Aryans of Asia, the Persians, and the Hindoos, for instance, whose hair is very black, belong either to the second or third category; either their hair presents the medullary coloured thread, or nothing particular can be distinguished in the centre.

the Papuan, the inhabitants of Southern India, the Malays, &c., possess hair which, examined in a longitudinal direction, present no difference between the cortical and the medullary substance. We should, however, deceive ourselves in deducing from this a general rule as regards these peoples. For, when the hair of a Bosjesman or a Negro is less deep in colour, when it approaches brown or red, the medullary substance is seen as distinct as in other races. Besides, though in jet black hair the substance is not visible, we are not justified in concluding that it is altogether absent.

After what has been stated, we attach only a relative value to the preceding classification; for we have just seen that the Aryan race presents in its different branches all the indicated varieties as regards the relations of the central substance to the peripheral. We must also bear in mind that the hair of the same individual belongs, according to the degree of its development, or the variety of colour, to either of these categories. I have further observed that the three conditions indicated may be found in the same hair: thus, the point and the inferior extremity of the stem may have a diaphanous centre; the adjoining portions of these parts may have a coloured medullary thread; whilst in the intermediate portion neither of the above conditions exists.

Whilst the inspection of the hair in a longitudinal direction is indispensable for the appreciation of the value of the indicated differences, it is nevertheless insufficient to establish a convenient base of classification. There is another method to attain our object: by subjecting to the microscope the transverse section.

IV.—*Microscopic Examination of the Transverse Sections of Hair.*

The transverse sections of hair must be as fine as possible. Whenever they are coarsely made, the hair collapses in the direction of its length, and we then cannot properly estimate its circumference. I used for my observations a small microscope by Oberhaeuser, Flandin's micrometer, and microtome, very carefully manufactured by Mr. Hartnaek. Without the microtome it seems to me very difficult, if not impossible, to obtain transverse sections sufficiently fine for exact study.

The figures accompanying my description express *hundreds of millimeters*. The transverse section of the hair is sometimes quite circular, but frequently more or less elongated, when two diameters must be indicated. I always place the large diameter before the second, separating them by the mark (:) indicative of their proportion. It must also be borne in mind that the two terms of the proportion express the *absolute dimensions* in hundreds of millimeters.

The transverse sections of the hair enable us to examine the form of their contour, and to establish their different diameters and their thickness by micrometry, as well as to assure ourself of the presence or absence of a medullary substance, and its relation to the

cortical substance. By these means the differential characters, if any exist in the human races, may be clearly established.

This portion of my researches being the most important, I have, for the convenience of the reader, adjoined plates. In order to exclude, on my part, any preconceived idea, I abstain from formulating in this place a rigorous classification; for, before classifying, we must ascertain whether the subject admits of it. Nevertheless, in order to proceed methodically, I separate the three great races of man in well-known groups, *e.g.* as Aryans, whatever their *habitat*; whilst at the same time I comprise such races whose hair presents analogous characters as in Negroes and certain Papuans.

Before entering into any details, I must offer some remarks, in order to avoid repetition. Hairs plucked from the same head always differ in thickness, sometimes in colour, as well as in the presence or absence of the medullary substance, and its relations to the cortical substance. It is not so as regards the form of their contours; *that is nearly constant in the same individual, except in crossbreeds.* Taking these facts into consideration, I have always examined numerous sections of several hairs of the same individual, besides which I have examined the hair of several individuals belonging to the same race. As I cannot in the plates represent all the sections I made, I shall confine myself to describe their general form without neglecting such which most deviate from it. I now proceed to the microscopic examination of the transverse sections of the human hair.

The reader is requested to supply, by the study of the plates, the brevity of the descriptions. The ordinary ciphers and the French or Greek letters will easily enable the reader to find the figures corresponding to the indications of the text.

1. NEGROES (vi).^{*} Among the six Negroes there was only one in whom the form of the contours of some of his hairs differed from the usual form.[†] This is elliptic in the great majority of cases. Exceptionally the ellipsis presents an inwardly curved margin, the section is then reniform, or rather the ellipsis presents a depressed spot. As a mean term, the diameters of the Negro hair are 20 : 12. The finer the hair, the greater the proportion of the small to the large diameter; thus, whilst the thickest hairs give 30 : 15,[‡] the finest hair gave 18 : 10, and even 15 : 10; and if these three proportions are reduced to hundreds, it will be found that the large diameter being represented by 100, the small diameter is 50 in the thickest hair, 55 in the intermediate, and 66 in the finest hair. From these data it appears that the hair of the Negro is flattened in proportion to its thickness. In the six samples, one of which is of red colour, one-half present the medullary substance perfectly distinct, at least in most of the sections. It is distinguished by a *small* central and circumscribed spot of the same form as that of the hair.

^{*} The Roman numbers indicate the number of individuals whose hair was examined by the indicated method.

[†] Three sections presented in this individual a nearly circular form.

[‡] The individual to whom these hairs belonged was born in Buenos Ayres.

in the sections as well as in the other three individuals examined, the medullary substance is absent; some marblings are, however, visible along the whole section. The hair of the Negro is thus elliptical and much flattened.* The medullary substance does not always exist; the centre is never empty.

2. HOTTENTOT—BOSJESMAN (I). The hairs of the individual examined are some black and some white, their form being that of the Negro. The ellipsis is, however, somewhat narrower; for, as a mean term, the two diameters are 20 : 11. The sections of the white hair show the medullary substance separated, whilst the black are only marbled.

β The hair from the pubes of the Bosjesman female, known under the name of the Hottentot Venus, presented a very flattened ellipsis; the diameters, the thickest of them, are 20 : 10. Some of the sections are kidney-shaped. No trace of a medullary substance. The small circles produced by the scrolling are but 1.5 millimeters in width.

3. PAPUANS OF NEW GUINEA (II). *a.* One of the heads of hair is very crisp; the form of its transverse sections, though always elliptic, is distinguished by the irregularity of one of its borders, which is either quite straight, or curved inwards in one or two spots; some sections are pointed at one of their extremities;† the proportions of the diameters denote *the greatest flattening which I have found in human hair*. The following are the dimensions—29 : 10 and 25 : 7 for the flattest; and 25 : 14 for the widest. The presence of the medullary substance is the rule in this individual, but the central spot which indicates it, is more contracted than in the Negro.

b. In the second individual, whose hairs are a little thicker, the contours of the ellipsis are more regular, though sometimes flattened on one of their borders. Diameters 32 : 14 and 28 : 13; no medullary substance in this Papuan, except in one section.

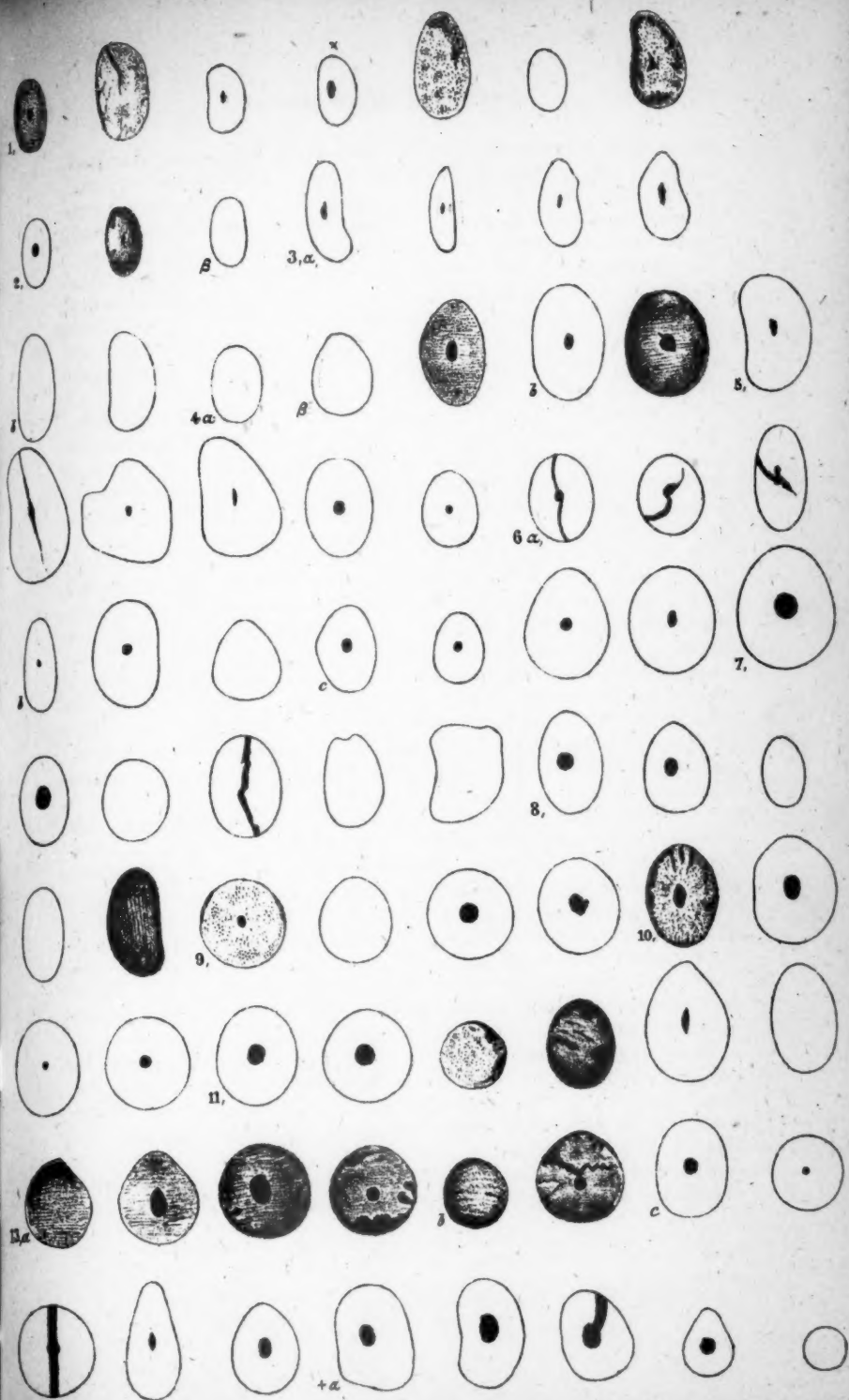
4. MELANESIANS OF OCEANIA. *a. From New Zealand (IV).* Three samples of these four heads of hair are of a yellow-reddish colour, the fourth is ash-grey; these are likely discoloured by some hair wash. One sample presents the crisp aspect of the Negro hair, the rest present circles which succeed each other at different distances, so as to form tresses rather than tufts.

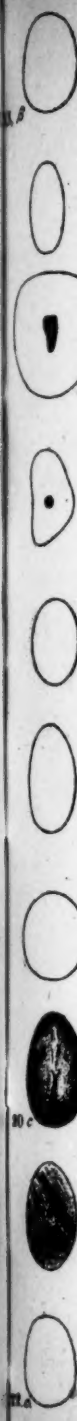
Though the general form of the sections is in these four samples still elliptic, it approaches the oval form by the enlargement of its small diameter. The crisp hair of the first sample, *a*, gives the diameters 22 : 15, whilst in the others, β , the measures give 24 : 18 30 : 20; 33 : 22.

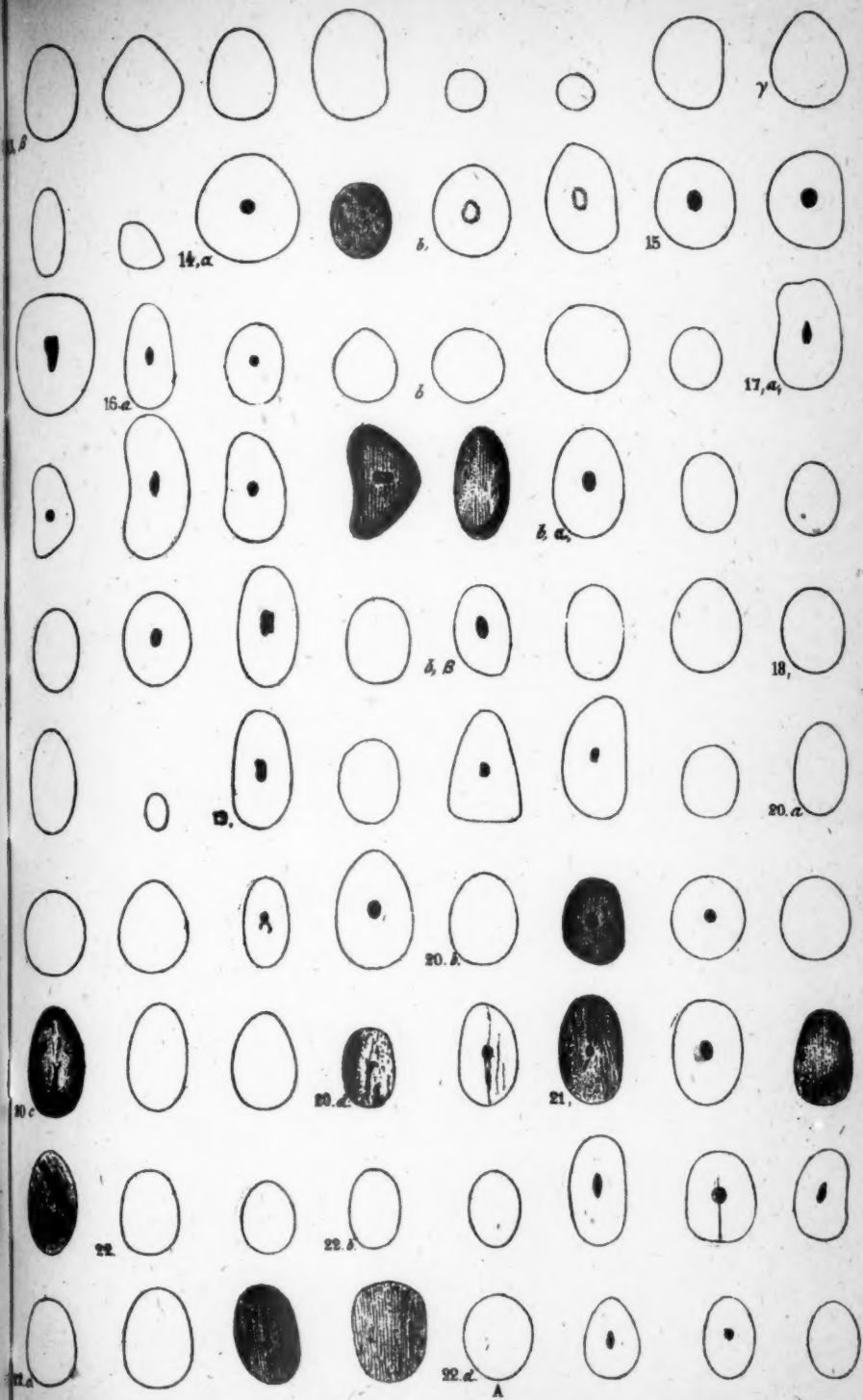
These hairs are generally thicker than those of the Negro, and it is a question whether the Malayo-Polynesian blood, so prevalent in

* The flattening is seen in the direction of the scroll. The small circles caused in rolling present a width of 3.5 to 4 millimeters when the hairs are very fine, and in the contrary case of 5 to 8 millimeters.

† Compare with the Negro of Buenos Ayres.







12.4
1a

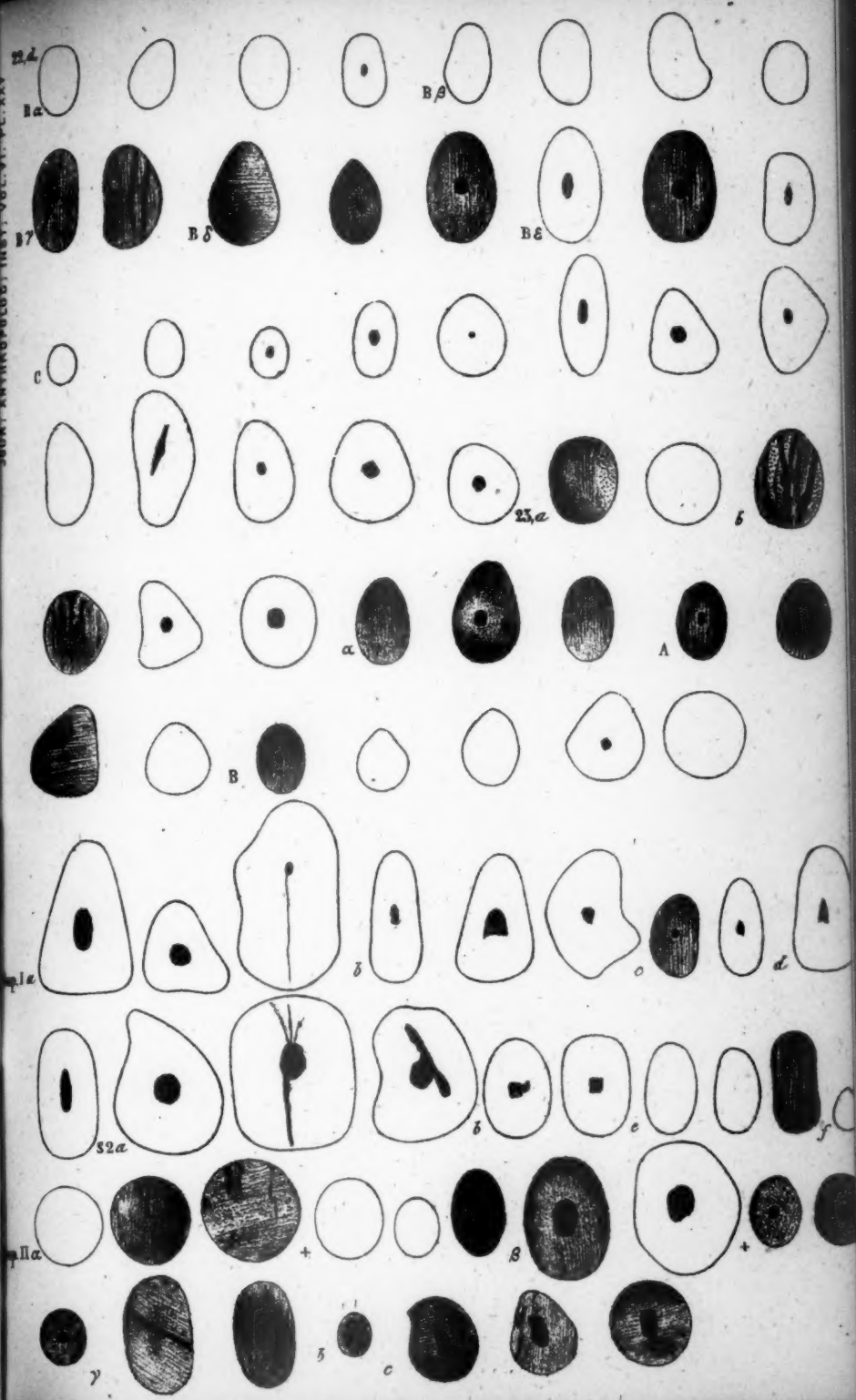
17

c

1a

1a

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Melanesia, did not run in the veins of the individuals whose hair is under examination. As regards the medullary substance, it is present in two samples and absent in the rest.

b. Néo-Caledonians (i). The same doubts as regards origin arise in the only specimen of hair I possess from New Caledonia. By its long exposure to the air the colour is ash-grey; it is much curled in all its length; the form of the section approaches the oval, but the margins are somewhat curved; the diameters vary between 30 : 20 and 27 : 25; the medullary substance is well defined.

c. Tasmanians (ii). Two specimens from Van Diemen's Land, one black, the other yellowish-white, approach the hair of the New Irelanders by their tresses, their diameters, and internal dispositions. Diameters of the black hairs = 25 : 15; of the light hairs = 25 : 15 to 27 : 20. The first has no medullary substance; the second has it much enlarged.

5. ARCHIPELAGO FIJI (IV). Two of the four specimens are of a reddish flaxen colour, the two others blackish-brown. One of the last heads of hair has the appearance of a large mop-shaped, very crisp wig. This and the two first are characterised by the great thickness of each individual hair, the yellow or orange colour in the interior of the sections, the large black central spot, and by the elliptical form of the contours, which predominates in spite of the irregularities presented in this respect by the hairs of the wig; where we observe reniform and triangular sections with depressed points and irregular margins, forms which are seen in the hairs of the beard in the Aryan race. Diameters = 35 : 20 and 33 : 20 in two individuals; but in the wig we find 40 : 22; 37 : 22, and even 37 : 20 for the elliptical sections with regular form.

One of the specimens, which is of a blackish brown, is distinguished from the rest by its relative fineness, and by the tendency of its sections to the oval form. Diameters = 28 : 20 and 22 : 16.

6. POLYNESIA. *a. Nukahiva (i).* Hair slightly frizzled and dark brown. The sections of the thick hairs have an elliptic form, whilst the fine hairs tend to the circular form.* Diameters = 30 : 15; 30 : 20; 25 : 20, and 22 : 10. The interior of these sections is reddish and marbled, scarcely any trace of a central spot.

b. Tikopia (ii). One specimen of hair smooth, amber colour; the second specimen, of the same colour, but intermixed with reddish-brown hairs. Besides the ellipsis ordinarily with one straight border, there are observed sections enlarged in their small diameter and approaching the oval form. The diameters vary between 30 : 20; 27 : 12, and 27 or 23 : 20. The interior of the section presents the central spot or marblings.

c. New Zealand (iii). These three scalps, black and dark brown in colour, show in their sections a greater tendency to the circular form than the preceding. Diameters = 30 : 20; 30 : 25; 25 : 17, and 20 : 15. The central spot is very distinct.

7. MALASIA (i). Hair of a Malay girl, jet black, and slightly

* Should this be a cross-bred ?

curled at the point; it presents, in its sections, forms intermediate between the circle and the perfect oval. Diameters = 35 : 27; 26 : 18; 25 : 17; 28 : 20, and 23 : 20. Some sections are irregular; the greater portions are only marbled; others have a central spot.

8. AUSTRALIA (II). Hair from Port St. George; black, much scrolled, and consequently of doubtful origin, presents in its sections an enlarged and irregular ellipsis. Diameters = 30 : 20; 25 : 20. Central spot very large.

Another specimen from the same country; colour red and very curly, consisting of finer hair, the sections of which are much flattened; their predominant form is the irregular ellipsis; there are also reniform sections. Diameters 25 : 15 to 25 : 30. Marblings without central spot.

9. JAPANESE (II). Man, and a girl seventeen years old. Hair of the male very black, stiff, and glossy; sections *perfectly round*. Their diameter is comprised between 25 and 22. The interior is marbled, rarely containing a small central spot. The sections of the hair of the girl present the same regular forms; most are round, some elongated; all have a large central spot. Diameters = 25 for the round, and 27 : 23 for the elongated.

10. SIAMESE (IV). Hair black and smooth. Besides perfectly circular sections, there are, in all individuals, some a little elongated. These latter present the following diameters = 28 : 20; 27 : 24; 26 : 24; and the largest are 30 : 23; 30 : 25. The greater part of the sections have a small central spot.

11. CHINESE (I). The hairs of the Chinese present sections of various forms, from the circular to the elliptic; the ellipsis is, however, never narrow. The following are the diameters for the elongated sections = 33 : 24; 30 : 21; 31 : 19; 30 : 25. The central spot is met with in one-half of the sections.

A cross-bred, whose father is a Chinese, and the mother a Siamese, presented in the sections of the hair a more or less circular form without any central spot.

12. AMERICANS FROM THE NORTH (I). I had only a few hairs from the cranium of a Choctaw at my disposal. The form of the sections of the fine hairs is nearly circular, whilst that of the thick hairs is somewhat elongated. The diameters of the latter are = 25 : 20. In the interior are seen marblings rather than central spots.

13. AMERICANS OF THE SOUTH. *a. Mummies of Aymards of Peru* (II). Hair very smooth, of considerable length, and of red colour, approaching brown. The form of the sections is nearly circular; but the margins are nearly always irregular and angular. The most elongated rings have diameters from 25 and 26 : 23. The central spot which exists in most of the sections is very large.

b. Americans of the South (I).* Hair black and coarse. The principal form of sections is a circle of 25 in diameter, with a small central spot. The diameters of the elongated sections are = 20 : 19,

* Without any indication as regards origin.

and present in their interior marblings rather than a separate medullary substance.

c. *Tribe of the Jambas* (1)*. This glossy, dark, and very coarse hair, presents all forms from oval to the circle; hence a great variation as regards the diameter = 33 : 15; 33 : 22; 25 : 20; 25 : 23. Small central spot in all the sections.

It appears to me of interest to add to the preceding observations relating to deceased persons of probably pure origin, the following three made on living subjects of the same continent.

a. M. M——, a native of the Peruvian Andes, aged sixty-three according to his own account a pure Indian. He is of lank stature; cranium brachycephalous and square, as usual in the Aymara race; cheekbones slightly prominent. The colour of the skin, and the ensemble of his physiognomy and stature, do not show his origin; the form of the cerebral cranium is, however, decidedly Indian. Let us now see what says the hair, which M. M—— assures us was formerly light, but is now whitened, inclining to a greenish-yellow; it is also stiff.

What strikes us in the sections of this hair, is the complete irregularity in its contours,† and the tendency of the small diameter to enlarge; a single section, which is the smallest of the five I have examined, presents the circular form without central spot. In all the others the medullary canal is very large. Diameters = 30 : 18; 30 : 22; 25 : 20; 18 : 15, and 12 : 12.

β The son of the preceding, a boy twelve years old, whose mother is also an Indian woman, has a head of hair very abundant, thick, slightly wavy, dark brown.‡ The sections of his hair are distinguished by their irregular contours; the smallest are rounded or square, whilst the larger are rather elongated. The form of the latter varies between a widened oval and pointed on one side (27 : 25), and an ellipsis with more or less interrupted borders (30 : 17; 30 : 20; 25 : 20). No traces of a medullary substance; the centre is transparent. Will this be the case at a more advanced age? We doubt it, as the father possesses the usual pigment, and we shall see in the sequel, in the children of the Basques, that they are in the same condition compared with the adults.

γ. M. M——z, of Lima, aged twenty-three. His father is a Spaniard, his mother an Indian. His hair is black, fine, very curly. The form of the sections presents, only exceptionally, that of an ellipsis (25 : 13), of a widened oval (26 : 21), and of triangles blunted at the points. The centre is perfectly transparent. Mr. M——z has the features of the Spanish stock, and slightly Semitic.

14. ESQUIMAUX (II). One of the specimens, black in colour, presents a round, or but little elongated form. Diameter of the

* Province of Macas.

† This peculiarity appears to me to depend somewhat on age; for I have observed it, though less marked, in the hair of aged Aryans.

‡ Excepting in the colour of the skin, the boy presents the Indian type.

first = 30, of the second = 20 : 17. Another specimen, altered in colour and in structure by its position in the earth, presents, besides round, also elliptical sections, with irregular, straight, or curved borders. The diameters vary from 36 : 20 to 25 : 22. Whilst the first specimen of hair is marbled in its sections, the second shows, in the middle of these sections, large holes with regular contours. Thus the medullary substance resisted decomposition less than the cortical.

15. MONGOL (I). Hair reddish brown, intermixed with red hair. The form of the sections approaches the circular. Diameters = 33 : 30 ; 25 : 23 ; 27 : 22. The central spot is large, and nowhere absent.

16. TURKS (II). One of the specimens, yellowish-grey, belongs to a Turk of Smyrna.* Though there are some rounded sections without central spot, the greater portion are very elongated, and present a small spot in the centre. The diameter of the latter varies between 30 : 15 and 23 : 17. The second of these sections belonged to a Kourogrou of Algeria. It is greyish-red, and is distinguished by the predominance of the round form in its sections, some of which are of a wide oval form = 17 : 15. It is noteworthy that the centre of all the sections is perfectly diaphanous.

17. EGYPTIANS. *a. Modern* (II). Though one specimen of these hairs be slightly frizzled and the second smooth, they present a great analogy in the form of their sections. The colour is intensely black. The predominant form is the ellipsis, with very irregular borders ; most of the sections are reniform. By the side of these curved ellipses there are some very abnormal in form, more or less triangular.† In the ellipsis the diameters are 40 : 17 ; 30 : 18 and 17 ; 30 : 15 ; in the finest hairs, 25 : 15 ; 28 : 15. Central spot very large in all the sections.

b. Mummies (VI) ; *a. with thick black hair* (III). Of these antique specimens of hair one only exactly corresponds with the preceding by the generally elliptical form of its sections and by the thickness of the hair (33 : 17 ; 33 : 20), as well as by the well marked central spots. The two other specimens show, in the form of their sections, a tendency towards the oval form (30 : 20 ; 22 : 15 ; 20 : 15). These are somewhat finer, with more regular contours ; the medulla is not always separate from the cortical substance.

β. Two specimens are brown inclining to red, and one is of reddish-yellow colour (III). The hair in these specimens is finer than in the black. The darkest incline towards the enlarged oval form, of which the following are the proportions, 25 and 26 : 20 ; 23 : 17 and 18. Most of the sections have a transparent centre, a few only show a small spot. The two lightest specimens furnished elliptical, mixed with oval sections, of the following dimensions : *a*, 25 : 15 and 20 ; 11 and 12 ; † *b*, 25 : 20 ; 25 : 15 and 15 : 10. We

* The origin of this individual is doubtful.

† Compare the wig of the Fiji with the hair of the beard.

‡ *a* reminds us of the Bosjesman and the Negro, and *b* of the Aryan ; but the presence of the two forms upon the same head modifies the first impression.

must also notice that *a* presents the central spots, whilst that of *b* is perfectly diaphanous.

18. **BERBER KABYLE (I).** The form of the sections varies between the ellipsis and the oval. Diameters = 28 : 17 ; 26 : 15 ; 25 and 23 : 18 ; no central spot.

19. **ARAB (I).** This specimen of black hair presents in the sections chiefly the elongated irregular ellipsis (34 : 18 ; 32 : 16), with small central spots, also some triangular sections* by the side of a secondary form, which is oval (23 : 17 ; 20 : 16), and without any central spot.

20. **EAST INDIANS.** By the kindness of Mr. de Montagu and his friends in India, Colonel Pope, Colonel Speak, and Dr. Leith, I am in possession of sixteen specimens of hair from natives of the Presidency of Bombay and the Central Deccan. In order not to encumber this short sketch with too many details, I shall confine myself to state the result of my researches on the hair of such native Indians considered as belonging to the primitive stock, to which I shall add the Hindoo Brahman as a member of the Aryan family. These specimens of hair are all, without exception, of a jet black, metallic or silky gloss, and the hairs more or less fine and curly ; all this is probably the effect of climate. By the aid of the microscope we may ascertain what belongs to the race.

a. Gond (I). The predominant form of the sections is elliptical (25 : 13 and 15) ; others present the pointed oval form (25 : 20), and there are some few perfectly round. Marblings in the interior ; no central spot.

b. Kole (II). Scarcely any section of elliptical form ; the greater number incline towards the wide oval ; generally great tendency towards circular contours. Diameters 33 : 22 ; 23 : 17 ; 25 : 20 ; 23 : 20. Marblings, or very small central spots.

c. Bhil (I). Form of sections, either an irregular ellipsis or an enlarged oval. In the first variety there is usually a small central spot ; in the second only marblings. Diameters 30 : 17 and 20 ; 26 : 18 ; 20 : 17.

† As regards the form of the sections all the other specimens belonging to the natives of India may be divided into two classes. Either it is the reniform ellipsis with a central spot which predominates, as for instance in a man of Ahmedabad, in a Varouli, and a Kathkouri ; or the form is circular mixed with irregular sections, which predominate, as in an individual of Mhar. In this specimen the central spot is seen also in the nearly circular sections. These specimens present on the whole in their sections the two extreme forms. Ordinarily one of these forms predominates in the same head, intermixed with intermediate oval forms. My researches are, however, not sufficiently advanced to show in such cases the primitive forms and the stock from which they are derived. I can only state the facts.

* Compare with the modern Egyptian, in whom there is sometimes a mixture of Arab blood.

d. Brahman (i). Very regular form of sections presenting a striking resemblance to each other; sometimes an ellipsis, the long borders of which very straight, the small curved, sometimes an oval. Diameters, 22 : 14; 28 : 16. A small central spot well defined, presents the same contours as the section in general.

21. *PERSIANS (ii).* The hair of these two specimens is somewhat thicker, as in the preceding. The forms of the sections are the same, namely, oviform ellipses, but with more equally curved border. Diameters, 30 : 17; 29 : 18; 29 : 20; 26 : 17. In one specimen the centre is diaphanous, in the second there is a well defined small spot.

22. *ARYANS OF EUROPE. a. Italian (i).* Hair chestnut colour. Sections oval, 23 : 17; 20 : 15; centre transparent.

b. Germans (iv). Hair sombre flaxen, or light chestnut colour; two specimens of males and two of females. The general form of the sections is oval and regular. Exceptionally the borders are somewhat straight, angular or curved. Among a considerable number of sections the flattest is 30 : 16, and the most circular 25 : 30. The great majority presents the following dimensions: 22 : 15; 21 : 15; 25 : 15. In one specimen of the two males, and one of the two females, the centre of all the sections is transparent; in the other of the male it is only transparent in some, and in the second female specimen it is scarcely transparent in any.

c. Lithuanians (ii). The colour of these two specimens is of straw-yellow.* The sections are oval, with a tendency to the circular form, specially so in one specimen. Diameters, *a*, 24 : 19; 27 : 20; *b*, 28 : 17; 28 : 20; 23 : 20. The centre is, without exception, transparent.

d. Irish (XLVIII). Excepting a single specimen obtained from a turf-pit, this collection has been formed from living persons by Abbé Domeneck. I have subjected all these samples of hair to a double examination; first, to ascertain the variations of the hair in a nation comparatively little mixed, and composed, as history teaches, to a great extent of Aryan elements; and, secondly, to assure myself whether there be an allophyletic stock intermixed with the Aryans. Moreover, accident having placed at my disposal a specimen of hair of great antiquity, its comparison with that of the living might furnish a base for the establishment of what is constant in human races, even in a system of the organism which presents such small proportions.

A. The hair obtained from the turf-pit is smooth and reddish-brown. Sections oviform and elliptical = 22 : 16; 22 : 15; 20 : 15. The centre presents in most cases a small central spot; it is diaphanous in others.

B. The other forty-seven specimens may, according to their colour, be divided into three series, of which the first (16) comprises light hair, mostly golden light; the second (16) com-

* The cranial type of these two young savants is that of the Slavonian race, both in the cerebral as well as the facial cranium.

prises dark hair; and the third (15) black hair. To spare the reader the trouble of tiresome details, I present a summary of the results obtained by the examination of the sections. And first, with regard to the volume of the hairs, the lighter the colour the finer the hairs, and *vice versa*. This rule is, however, subject to exceptions; there are three specimens of golden light, the hair of which attains the thickness of the black hairs. As regards the form of the contours of the sections, there is not a single specimen which does not present elliptical or oval sections; but whilst this is the predominant and almost exclusive form in the light hair, there are, on the contrary, in the dark specimens, besides elongated sections, others more or less circular. The irregular contours are rare in the first variety, and very frequent in the second. The light and fine hairs have generally a transparent centre, whilst the black as well as coarse light hair present central spots, at times very large. When now we consider the sufficiently constant form and volume of the hair belonging to the branches of the Aryan family, characters which are to a considerable extent found among the Irish, we can only, as regards the variations, attribute them to the commixture of a foreign element.* The examination of the hair of Basques will confirm this view. It results farther, from this examination, that in the intermixture of races there may be not merely fusion, but a change of characters; at least as regards the hair.

The following table, containing the measures of the extreme forms, will support the preceding remarks:—

B. LIGHT HAIR.		C. BLACK HAIR.	
Ordinary Proportions with Transparent Centre.			
a.	20 : 15 ; 21 : 15 ; 20 : 13.		22 : 13 ; 15 : 12 ; 12 : 11.
β.	27 : 12 ; 25 : 12 ; 25 : 15 ; 20 : 12 ; 20 : 15.		31 : 20 ; 35 : 15 ; 24 : 20 ; 25 : 20.
Exceptional Proportions and Central Spots.			
γ.	30 : 16 ; 26 : 16.		34 : 15 ; 30 : 16 ; 27 : 15.
δ.	32 : 20 ; 30 : 21 ; 25 : 15.		30 : 18 ; 30 : 25.
ε.	34 : 19 ; 33 : 21 ; 27 : 15.		32 : 20 ; 23 : 21.

23. BASQUES. All shades, from flaxen to deep black, are represented in the Basques of the present day. The light colour is preferentially found among those inhabiting the coast and the highest mountains. The average colour of the hair of the Basques is chestnut.† The light hair curls very easily, which is generally not the case with the black.

a. Specimen of black hair from a child aged 11; some light

* The craniological researches of Mr. Wilde evidently prove that, before the historical epoch, there existed in Ireland, as well as in England, Scotland, France, &c., two different races, the one brachycephalous, and the other dolichocephalous.

† The Basques are, in my opinion, far from constituting a homogeneous race. I believe them, on the contrary, to be much mixed. The marriages of the ancient Iberians with the Celts have been already noticed by the classical authors. The study of the physical type, specially of the cranium (see M. Broca's collection in the Museum of the Society), confirm these historical data.

coloured hair in the occipital region. All the sections approach the circular form; the most elongated are 25 : 20. No central spot.

b. Adult male with stiff black hair. All the sections are oval or enlarged ellipses; some are triangular. Central spot well marked. Diameters, 29 : 20; 23 : 18; 24 : 22; 27 : 23.

It is evident that these specimens approach both the American and the Turanian, just as the language of the Basques recalls the Iberian origin.

We now examine the light hair.

a. Specimen of light colour inclining to chestnut, wavy, much curled. Sections elongated and oviform, most of them without central spot. Diameters = 30 : 15; 30 : 20; 25 : 15.

In order to show the effect of the commixture of heterogeneous races, as for instance the Aryan and Iberian, I have examined the hair of two brothers, whose father is a Basque and the mother an Irishwoman. The following are the results of the examination:—

A. Chestnut coloured hair, intermixed with white hairs, slightly curled. Most of the sections are elliptical, narrow, with a diaphanous centre. Diameters = 25 : 15; 22 : 17; 22 : 15. But besides this predominant form, there are circular and triangular sections, &c. These latter sections have sometimes a small central spot.

B. Hair darker and stiffer. The elongated form of the sections is not absent (30 : 15; 25 : 17; 20 : 15; 20 : 17); but more than one-half of the sections approach the circular form and have a central spot, though it is smaller than in the Basque with black hair.*

24. *French.* The hair of the French, of which I have examined a considerable number of specimens, presents all the shades and forms found in the series 22 and 23, which is explained by the multiplicity of ethnic elements which compose that great nation.

SUPPLEMENT.

I.—Examination of the hair in some other parts of the body.

1. *Italians.*—*a.* Moustaches. Hair, white and yellowish. Most of the sections are very irregular in form, resembling, for example, a triangle, or the form of the sole of a shoe, &c.† These thick hairs attain considerable dimensions; the following are the measurements : 55 : 30; 48 : 30; 45 : 30; 27 : 25. The central spot is of relative size. In no section is it entirely absent.

b. The hairs on the genitals are also very thick; their contours are more regular, though some have very singular forms. In the sections with regular forms, the central spots are relatively small. Diameters = 38 : 15; 38 : 18; 38 : 23.

c. The hairs on the coccygian region are fine, and approach, much

* Of these two brothers, A represents the elongated cranium of the Celts, despite the Iberian origin of his father; whilst the cranium of B is rounder.

† That which is the exception in the hairs of some individuals, is the rule as regards the beard.

more than the preceding, the hair on the head, by their dimensions and forms. Diameters = 23 : 14; 28 : 13. Scarcely any traces of a central spot.

d. The hairs on the chest present generally the form of a shoe-sole; some of the sections are more regularly elliptical. Diameters = 38 : 37 and 36 : 20. Large central spot.

e. The hairs of the armpit, all with very diaphanous centres present in their sections more or less regular ellipses. Diameters = 30 : 16; 32 : 18; 30 : 13; 23 : 15.

2. *German*. The same characters as in the Italian are observed in the hair of the beard and the armpit. The hairs on the genitals present no abnormal form.

f. The down on the back of the hand presents in the section the oval form with transparent centre. Diameter = 13 : 9.

II.—*Hairs on the heads of Anthropomorphous Apes.*

a. *Male Chimpanzee*. The sections are large: between 30 and 23. Their form is generally circular or nearly so: for example 25 : 24.

Female Chimpanzee. Hair somewhat finer. The complete circular form more rare, approaching rather the oval. Diameters = 24 : 20; 18 : 14, and exceptionally 25 : 16.

In both sexes no trace of a medullary canal.

β. *Male Adult Gorilla*. Hairs very thick. The form of the sections rather irregular; partakes of the ellipsis and the oval. Diameters = 37 : 25; 35 : 25; 40 : 31; in the finest = 27 : 23. The medullary canal is enormously large.

† *Young Female Gorilla*. Hairs finer. Their sections are either very regular, or with borders, if not angular, at least deviating from the regular curve. Diameters = 20 : 15; * 22 : 16; 17 : 10. The medullary canal is small and rarely placed in the centre.

γ. *Orang-Outang*. Sections large and elongated in ellipses, without central spots. Diameters = 35 : 20; 31 : 18.

b. *Gibbon (Rafflesii)*. Hairs extremely fine. Sections oval and very regular, without central spots. Diameters = 15 : 12; 13 : 10.

c. *Cynocephalous Baboon*. Besides circular sections there are some elongated, with irregular contours. Diameters of the first = 25; of the second, 25 : 20. Central spots very large and elongated.

Résumé.

1. Microscopic examination accounts for the different aspects which the hair of the human races presents to the naked eye. The flatter the hair the more it curls, and the rounder the hair, the more stiff and smooth it becomes.

2. One extreme end of the scale is represented by the Papuas, the Bosjesmans, and the Negroes; the other by the Polynesians, the Malays, the Siamese, the Japanese, the Turanians, and Americans, not excepting the Esquimaux. The Aryans occupy the intermediate space.

* A striking analogy, in early age, with the Ayran race, at least in regard to the diameters of the first two sections.

3. The Basques differ from the Aryan stock as much by their hair as by their language.

4. Cross-breeds are recognisable by the fusion and juxtaposition of the characters inherent in the hair of their parents.

5. It is much less the anatomical disposition of the constituent elements, than the *form* of the hair, which produces the characteristic differences. Anatomically there would only be the transparent centre deprived of medullary substance in some branches of the Aryan race which would deserve to be considered. But the fine points of the hair belonging to allophyletic races, as well as their down, present the same peculiarity.

6. A single hair, presenting the average form characteristic of the race, might serve to define it. But without pretending to this degree of certainty, it is indubitable that the hair of the individual bears the stamp of his origin.

7. Though there are appreciable differences in the form of hairs in the same individual, the extreme forms are only met upon the same head where there is commixture of blood.

8. The small scale assigned to the diameters of the hair explains the relative resemblances between single hairs belonging to individuals of different stocks; but in spite of this apparent inconvenience, the general or predominant form of the sections does not in the same race transgress certain limits, and it is upon this that we must base our diagnosis.

9. The hair examined by our method appears to us to possess an incontestable value for the study of characters inherent in the races of man.

10. Some will find in it forms of transition, for instance, from the Polynesian to the Melanesian, from the Malay and Lithuanian to the Turanian, &c.; from this and the Basque to the American, &c.; whilst others may energetically point out the different and constant forms even in this apparently insignificant appendage of the skin.

11. It is with the form of the hair as with the form of the cranium, however unequal may be the importance of these two characters.

12. I have confined myself to the study of facts. But whilst admiring the incomparable wisdom of the Creator, who has so marvellously diversified what is apparently so minute, I declare my inability to trace it back to the origin of the creature.

Explanation of the Plates, which represent the transverse sections of hair of the following races.—I. Magnified 320 diameters.

PLATE XXIII.

1. Negroes.

2. Hottentot Bosjeman.

β Hair from the pubes of the Bosjeman female known as the Hottentot Venus.

3. *a* Papuans of New Guinea.

b Variety among the same race.

4. Melanesians of Oceania.

a " New Zealand.

β " Variety among the same.

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| <p><i>b</i> Melanesians of New Caledonia.</p> <p>5. Archipelago—Fiji.</p> <p>6. Polynesia.
 <i>a</i> Nukahiva.
 <i>b</i> Ticopia.
 <i>c</i> New Zealand.</p> <p>7. Malasia.</p> <p>8. Australia.</p> <p>9. Japanese.</p> | <p>10. Siamese.</p> <p>11. Chinese.</p> <p>13. Americans, South.
 <i>a</i> Aymara mummy from Peru.
 <i>b</i> An unknown tribe.
 <i>c</i> Jamba tribe (Province of Macas).
 <i>†a</i> Native of Peruvian Andes.</p> |
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PLATE XXIV.

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| <p>Peruvians—<i>Continued.</i>
 <i>β</i> Son of preceding.
 <i>γ</i> Native of Lima, Spanish father, Indian mother.</p> <p>14. Esquimo.
 <i>b</i> Another specimen.</p> <p>15. Mongol.</p> <p>16. Turk.
 <i>a</i> Native of Smyrna.
 <i>b</i> Kouroglou of Algeria.</p> <p>17. Egyptian.
 <i>a</i> Modern.
 <i>ba</i> Mummy, thick black hair.
 <i>bβ</i> „ reddish yellow hair.</p> | <p>18. Berber Kabyle.</p> <p>19. Arab.</p> <p>20. East Indians.
 <i>a</i> Gond.
 <i>b</i> Kole.
 <i>c</i> Bhil.
 <i>d</i> Brahman.</p> <p>21. Persian.</p> <p>22. Aryans of Europe.
 <i>a</i> Italian.
 <i>b</i> German.
 <i>c</i> Lithuanian.
 <i>d</i> Irish.
 <i>A</i> From a turf pit.</p> |
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PLATE XXV.

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| <p>Irish—<i>Continued.</i>
 22<i>d</i> B Modern light hair.
 <i>a</i> Hair with transparent centre and of small circumference.
 <i>γδe</i> Hair with the central spot and of large circumference.
 C Black hair.</p> | <p>23. Basques.
 <i>a</i> Black hair, infant eleven years of age.
 <i>b</i> Black hair, adult.
 <i>a</i> Light hair.
 A & B Hair of two brothers who have a Basque father and Irish mother.</p> |
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SUPPLEMENT.

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| <p>I. Hair from various parts of the body.</p> <p>I. Italian.
 <i>a</i> Moustaches.
 <i>b</i> Hair from genital region.
 <i>c</i> Hair from coccygean region.
 <i>d</i> Hair from chest.</p> | <p>II. German.
 <i>a</i> Moustaches.
 <i>b</i> Hair from genital region.
 <i>c</i> Hair from armpits.
 <i>f</i> Down from back of hand.</p> <p>II. Hair from head of Anthropomorphous apes.
 <i>a</i> Male chimpanzee.</p> |
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† Female chimpanzee.

β Male adult gorilla.

† Female „ „

γ Orang-outang.

b Gibbon (Raffley).

c Cynocephalous baboon.

The foregoing translation of Dr. Pruner-Bey's paper was published in the "Anthropological Review," vol. ii. 1864, but without the accompanying plates. It has now been thought desirable to republish the whole with Dr. Paul Broca's kind consent, and this paper will be followed in a future number of this Journal by a translation of a further paper on the same subject by the same author, with explanatory plates.

TREATISE ON MAN. By GEORGE HARRIS, LL.D., F.S.A., &c.
(Vice-President Anthropological Institute).

DR. GEORGE HARRIS, F.S.A., Vice-President of the Anthropological Institute and of the Psychological Society, has published the results of much thought and study in "A Philosophical Treatise on the Nature and Constitution of Man." 2 vols.* His object, as stated by himself, "is to afford a comprehensive and complete survey of the nature of man as regards his intelligent being; to exhibit the direct and immediate connection of each department in his constitution with its corresponding relation, and to demonstrate the uniform mechanism of the whole as one entire and consistent system." The work, it will be seen, occupies a widely different ground from that taken by those treatises on anthropology which are devoted to the patient accumulation and comparison of the facts collected by observers of the physical and mental characteristics of man. The author remarks that while he has gathered much from the study of books, and has learnt still more from the study of the world, he has gained most of all from the study of himself—from looking inwardly. If this avowal should be thought to render criticism difficult in a journal mainly devoted to accumulating the materials for large induction, it will not detract from the real anthropological value of the work, which, we are told, has occupied the leisure of many years of the author's life. Those who know the author and his previous writings well enough to anticipate that they will find in it thoughtful and scholarly writing, elegant and well-chosen English, will not meet with any disappointment in its perusal. Added value is given to it by the interesting circumstance that the proof-sheets of several portions were submitted to learned friends of the author—such as Sir John Lubbock, Dr. Richardson, Dr. Newman, and many others—and have been enriched by their comments.

One characteristic of Dr. Harris's works is that he leans rather towards the older authorities than the newer lights in the numerous quotations he makes. Even Jacob Behmen's speculations are noticed, and he is described, with truth, as a "very remarkable and original, and most suggestive, although occasionally extravagant and mysterious writer." Prefixed to the "Treatise" is a pre-

* London: G. Bell and Sons, 1876.

liminary dissertation, in which the origin of animated beings, their constitution, the different kinds of vitality, and the functions of soul, mind, and spirit are discussed in a tone of due reverence. In these respects Dr. Harris enters into speculations of so high a character that they cannot suitably be discussed in these pages, since they concern the essence and operation of spiritual beings and the possibilities of the future state. As to the organ of intelligence—the brain—he remarks, “we certainly do find that men’s intellectual characters do conform very much with the general shape of the brain; and” he adds, “the expression of their countenance.” His remarks on the dissolution of union between soul and body, and on the spiritual endowment existent in animals, have already been communicated in substance to the *Anthropological Institute*, as well as to the *British Association* (see this *Journal*, ii. 69; iii. 73). The considerations as to the mutual relations of reason and instinct then laid before the members, however, are here pushed further, and the probabilities of future existence for animals after death and their condition therein, are discussed.

The body of the work is divided into three books, dealing respectively with the medial, the moral, and the mental nature and constitution of man. The medial properties, described in Book I., are so called, “being entirely of that middle or intermediate nature, strictly essentially, and exclusively, neither animal nor material, nor entirely either physical, moral, or intellectual. They cannot, indeed, as a class, be rightly termed animal, inasmuch as of certain of them animals do not partake. They cannot be termed material or physical, because they do not exclusively either belong to, or arise in the body. They are not strictly moral or intellectual, as beings who have no endowments belonging to this part of our nature are fully gifted with them. The medial endowments, however, reside in, or arise out of, certain properties common to each of these several parts of our system. The main and special characteristic is therefore of a middle or intermediate kind between animal and intellectual nature, although belonging entirely, strictly, and properly to neither alone, but appertaining in part to each, and being essentially of a mixed order.”

The qualities described under this head are sensation, emotion, appetite, passion, and affection; in conjunction with the latter, animal attachment is also considered. “Sensation is the power possessed by the material frame, or by some part or organ belonging to it, of receiving the impression, reflection, or image of any object independent of the object itself.” From sensation to emotion the transition is easy and natural. Emotions are divided into material and mental, and again into simple and complex. The simple emotions are pain and grief, pleasure and joy, irritation and surprise. The complex emotions are attachment and aversion, fear and hope, sorrow and mirth, suspense, curiosity, pride, shame, pity, admiration, and envy. An appetite is “defined to be an agitation or excitement of a painful nature, arising in some part or organ of the body, according to the nature of the particular appetite; and which

feeling is accompanied by, or productive of, an impulse to the commission of some specific act, immediately calculated to appease such appetite." These are hunger and concupiscence, and Dr. Harris discusses the physical organisation connected with both, their growth and maturity, their legitimate objects, functions, and influences, the varieties of their operation, the means of exercising restraint and discipline over them, and the different manner of their excitement and action in man and other organised beings. The distinction between appetite and passion is laid down as follows:—"As the appetites consist in certain vehement excitements, originating principally in the material part of our being, extending their influence to, and ultimately impelling, the soul as well; so the passions, on the other hand, consist in certain excitements no less powerful, although generally less permanent, originating primarily in the soul, and extending their influence to, and ultimately impelling also the body." These are anger, terror, and love. The section in which Dr. Harris discusses the variety of the operation of the passions in animals and in man is rendered specially interesting by having been submitted in proof to Professor de Quatrefages, Mr. Wallace, and Professor C. J. Plumptre, and enriched with their observations. On two or three points Dr. Harris seems disposed to attack positions taken up by Mr. Darwin, and we agree with Mr. Wallace in wishing that the author had worked out his own views more fully, and had followed Mr. Darwin's example by giving copious facts and observations in support of them. The last of the feelings, excitements, or endowments appertaining to the medial constitution of man—affection—"consists in, or is constituted by, the settled and energetic attraction of the inclinations or emotions of the being moved by it towards some particular intelligent object with which he is in some way connected, so as to desire the constant presence, as also the welfare of such object."

The moral nature and constitution of man, and the operation of conscience, form the subject of Book II., and are treated with originality and vigour of thought, and great thoroughness.

Book III. is devoted to the mental nature and constitution of man, including the intellectual faculties, the faculties of understanding, reason, and genius, and the memory. The work concludes with a chapter on the concurrent operation and reciprocal influence of the various medial, moral, and mental endowments and powers of the soul, and some weighty considerations on mental discipline and cultivation. Dr. Harris quotes from Professor Huxley an anecdote that Des Cartes, when some one asked to see his library, took him into the dissecting room and showed him various anatomical preparations. He adds, "during the progress of the present work many hundreds of minds have been dissected by the author, and their various functions attentively examined while in full operation;" and remarks, with humour, "this is a species of vivisection which may be performed without cruelty or even pain, and of which the patient, however sensitive, is wholly unconscious."

We have probably quoted enough from this very thoughtful and

suggestive work to induce the many members of the Institute who are interested in the psychological treatment of the question to seek pleasure and instruction in its pages.

Abstract by Professor W. Boyd Dawkins, F.R.S., of a paper entitled *THE BONE CAVES OF CRESWELL CRAGS*. By the Rev. J. M. MOLE, F.G.S.—On the *MAMMALIA* and *TRACES OF MAN* found in the *ROBIN HOOD CAVE*. By Professor W. BOYD DAWKINS, F.R.S. Read at the Geological Society, April 5, 1876.

ON the north-eastern border of Derbyshire, a picturesque, well-wooded ravine, known as Creswell Crags, penetrates a low range of hills composed of magnesian limestone, with a stream of water flowing through it, and with caves and rock fissures opening into it on either side. In one of these, some forty or fifty yards long, known as "the Pin Hole," was an accumulation of sand, with big blocks of stone, pebbles, and large quantities of bones and teeth. The sand and pebbles had obviously been introduced by the stream flowing past the entrance, the big blocks of stone had fallen from the roof in the long course of ages, while the remains of the animals were scored and marked with teeth in such a manner as to leave no doubt as to the possessors having fallen a prey to some carnivore, which had eaten not merely their flesh but all their more slender and marrow-containing bones; and this creature was proved to be the spotted hyæna, now found only in Central and Southern Africa, by the associated jaws and teeth worn down to stumps from its bone-eating habits. The victims identified by Professor Busk belong to the grisly bear, wolf, common fox, Arctic fox, glutton, bison, reindeer, Irish elk, horse, woolly rhinoceros, and mammoth. Of these the Arctic fox, so abundant in the northern regions of Asia and America, is new to Britain, although it has been met with in similar accumulations in France, Germany, and Switzerland. The cave had evidently been a lair of hyænas, into which they had dragged the fragments of their food. And the victims which came within reach of their jaws are, of course, to be looked upon as samples of the animals then living in that region. We picture to ourselves the majestic Irish elk, the unwieldy mammoth and rhinoceros, the small horses, and the bison and reindeer inhabiting the woodlands of the Upper Trent and coming down to the stream at Creswell to drink, to be scared by the echoing laugh of the hyænas, and to become their prey. A grisly bear would, of course, beat a hyæna in fair fight; and we can only account for its presence in the hyæna den by the supposition that it met with an accident or was overwhelmed by the number of its foes, which frequently hunt in packs. We may infer from the presence of the Arctic fox and the reindeer that the climate was more severe in Derbyshire during the time the cave was inhabited than it is now. It was probably analogous to that of America, north of a line drawn from Omaha to San Francisco, where the summer heat and the winter cold are excessive.

These discoveries were promptly followed up last autumn by the exploration of another cave close by, known as "the Robin Hood"—a familiar name in Derbyshire for caves—which revealed the presence of man in the neighbourhood while the animals mentioned above were roaming over the district. On the floor was a layer of light sand, without animal remains, on which rested a deposit of red sand of the same kind as that in the Pin Hole, and containing the bones of the same animals, with the exception of the glutton and the Arctic fox, and with the addition of the lion, the wild boar, and the brown bear. These had evidently been introduced by the hyænas. Above this was a stratum of red earth also containing the same species, but in addition a large number of rude implements of flint and of quartzite, triangular flakes which had been used for cutting, oval implements, with a cutting surface all round, and scrapers, which from their likeness to those in use among the Eskimos and North American Indians, were intended for the preparation of hides. These last are of the same sort as those which have been described as being in use in 1873 among the Shoshone Indians of North-Western Wyoming. "The Shoshones," an observer writes, "though mostly provided with tools of iron and steel of approved patterns, are still to be seen employing, as a scraper in the dressing of skins, a mere teshoa, consisting of a small horn boulder, thinner at one end, split through the middle in such a manner as to furnish a rough cutting edge at one side." And he adds, "there seems to be a considerable advantage in this over any form of knife or other tool which has yet reached them from without, and it is probable that it will be retained so long as their present method of preparing hides is in vogue." It is not a little strange to meet with this very tool in a cave in Derbyshire. The whole group of implements from this strata is of the same type as those found in the caves of Moustier, in Auvergne, and the lowest strata in Kent's Hole, as well as those which are scattered through the deposits of ancient rivers, in association with the extinct animals from the Alps and Pyrenees, as far to the north as Lincoln and Cambridge, and which have been met with in Palestine as well as in India. They all belong to man in the hunter stage of existence, and their presence here in association with the remains of animals brought in by the hyænas proves that the cave was occupied sometimes by the hyæna and sometimes by the hunters during the time that the red earth was being slowly deposited by the action of the rain.

The third stage in the history of the cave is represented by the breccia, a layer of earth, stones, bones of rhinoceros, hyæna, and reindeer; charcoal and implements cemented together into a solid mass by a calcareous infiltration, and covering up the red earth. Here the rude tools, manufactured for the most part out of stones found in the district, are replaced by a more highly finished series, made of flint brought from a distance, and altogether superior to them in style and workmanship. Among the more noteworthy are well-chipped spear-heads of the same pattern as those found in

several of the caves and stations of the reindeer folk in France, as, for example, at Solilié, and which are held by M. Gabriel de Mortillet to be of later date than the ruder forms which have been described from the cave earth. In this case, then, we have proof of the truth of his classification, which was intended merely to apply to the palæolithic implements of France. Similar finely-chipped spear-heads have been discovered in Kent's Hole and Wookey Hole, and form part of a series which is associated with the incised carvings of animals, such as the reindeer, mammoth, and horse, which are so striking in the accumulations of refuse left behind by the Eskimos dwellers in caves in Central Europe. Belgium is the nearest point to Créswell Crags, in an easterly direction, in which they have been discovered up to this time. We must therefore take these more highly-finished articles to imply the presence of hunters in Derbyshire following the same kind of life as the Eskimos of the continental caves, armed with the bow and the spear, unacquainted with metal and the use of pottery, and unaided in the chase by the dog. Among the animals which they hunted in Derbyshire was the reindeer, and the hyæna was not extinct in their time. To the presence, indeed, of this bone-eating animal we should be inclined to attribute the extraordinary rarity of human bones of this period as compared with their great abundance in the succeeding neolithic age. There is no reason why a human bone should not last as long as that of a fox or a lion. Probably the palæolithic, like the modern Eskimos, were careless of the dead, in which case the hyænas would quickly make an end of them. On the breccia was a modern accumulation of surface soil, containing fragments of Roman and mediæval pottery.

Thus we have a regular sequence of events recorded in Robin Hood's cave. First, there was a time when it was a den of hyænas, and man was not. Secondly, it was occupied by a rude tribe of hunters, from time to time, and when they left it the hyænas returned to their old haunts. Thirdly, another set of hunters, allied to the Eskimos, then living on the continent, followed the hunt, until they, too, found a shelter here. And, lastly, after an interval, in which most of the animals mentioned above became either extinct or retreated to hotter or to colder climates, it was visited during the Roman occupation of Britain. We take this discovery to be the most important, in its general bearings, which has been made in this country since the exploration of the Brixham cave in 1858.

THE MECHANISM OF MAN: *in answer to the question, What am I?*

By E. W. Cox, Serjeant-at-Law, President of the Psychological Society of Great Britain. Vol. I., *The Mechanism*. London: Longmans & Co. 1876.

THE present book is to a certain extent a new and enlarged edition of the work, "What am I?" which we noticed in this Journal at the time of its appearance. The author tells us in his preface that "a new edition being called for, I resolved, after some consideration, to extend and re-cast the entire work. The subject

had grown upon me as the task proceeded. One thought had suggested other new thoughts. A more systematic scheme of treatment had occurred to me. Some themes fitly belonging to the subject had been overlooked. Criticism had discovered defects to be removed, and omissions to be supplied. Further reflection had changed some of the suggestions offered, and modified others. Instead of a new edition, I resolved to re-cast and re-write almost the entire of the work, to extend the scheme of it, and to give to it a more appropriate name. It is now in fact, as in title, a new book, increased in bulk by one-fourth, and having three-fourths of it entirely new." (Preface, ix.)

This statement of the author will serve to show the precise nature of the present work, and wherein it differs from that which preceded it. The various sections have been entirely re-arranged as regards the order in which they are placed. Many of them have been re-written, and a considerable amount of new matter has been added, so as to increase the bulk of the present volume from 367 to 495 pages. In addition to this, what we cannot but consider a great desideratum in a book of this kind, in order to facilitate reference to the vast number of subjects which it embraces, a copious index has been supplied. The work, thus rendered complete, will form a valuable addition to the library of every student of the science of man, embracing as it does all the leading questions connected with that department, while its matter will be found to be full of deep interest to all inquirers into this most important topic.

THE OTHER WORLD; or Glimpses of the Supernatural, &c. Edited by the Rev. F. G. LEE, D.C.L. In two vols. London: Henry S. King & Co. 1875.

THE work before us ranges over a vast variety of subjects, a limited portion only of which come within the province of the anthropologist, as regards the psychological department of the science. We shall scrutinise, as we proceed, the facts adduced bearing on this topic, and its mode of treatment adopted by our author. The first volume enters largely upon matters which are considerably more theological than philosophical in their nature, such as "the miraculous in Church history," and "the spiritual powers and properties of the Church—sacraments, sacramentals." Upon subjects such as these we must of course decline to enter; while at the same time we may, passingly, express our satisfaction that our omission to do so will be abundantly atoned for by those of our numerous contemporaries which are especially devoted to topics of this class. Even Materialism our author deals with rather in its polemical than its philosophical aspect; and Necromancy is treated more as a religious than a scientific question.

The subject of "Dreams," which is closely connected with that of psychology, though here considered in conjunction with "omens, warnings, presentiments, and second sight" (hardly within the province of anthropology, extensive as that province is), has lately attracted a good deal of notice, and excited much discussion,



especially in the scientific treatises of Dr. Carpenter and Mr. Serjeant Cox. Passing by the theological consideration of the subject to which our author devotes several pages exclusively, we are led to the examination of the facts adduced by him, and to his conclusions drawn from those facts. In dealing with phenomena of this description, it is especially important that two leading circumstances should be inquired into and determined. 1. Are the facts as stated clearly ascertained, and are they correctly set forth? 2. Did the predictions asserted to have been made on the occurrence of these phenomena really come to pass as foretold? Inquiries of this kind are well worthy the consideration of philosophical societies devoted to investigations of this class—the Psychological Society, for instance. And it would be desirable to select one prominent case of this description for searching investigation before a sound judging, impartial, scientific tribunal. For instance, the remarkable presentiment respecting Mr. Perceval's assassination, which is recorded by Dr. Lee, and which has been several times mentioned by different writers, appears a very suitable case for an inquiry of this sort. Probably the most perplexing cases of avowed apparitions are those relating to the appearance of persons at the moment of death, who have died in a far distant land, especially where, as in the case related in Lord Brougham's memoirs,* this was in pursuance of a mutual promise between the parties. Of appearances of this class, our author adduces some instances which he considers to be well authenticated. Several of these anecdotes have already appeared in other works of this description; but to have omitted them on that account would have necessarily rendered the present collection imperfect, and which does not pretend to consist entirely of original narratives. To all lovers of the romantic, and more especially to those who are curious in speculations and inquiries of the nature here alluded to, the book before us must be full of deep and exciting interest, and will be read by them with avidity. To reject all such cases with stern incredulity, and without examination, is surely as unscientific as the unwarrantable credulity exhibited with regard to them by those who accept whatever of this kind is presented to their notice, without inquiry and without scrutiny.

PREHISTORIC ANTIQUITIES IN FLORIDA, U.S.

THE *Cincinnati Commercial* of the 16th March, 1876, gives an account of the opening of a mound on Colonel Hart's plantation on Murphy's Island, near Pilatka, on the St. John's River, Florida.

At the southern end of Lake George an artificial reservoir is

* Vol. i. pp. 201—204. Dr. Lee, however, omits to state that Lord Brougham concludes the paragraph here quoted from by recording his deliberate conviction that the appearance in question might be accounted for by natural causes. But then this opinion was formed sixty years after the occurrence of the event, and we have been assured, on reliable authority, that in the interim Lord Brougham expressed his belief that the apparition in question was really genuine, which would seem to have been his feeling at the time he described it in his journal.

described 100 yards broad by 150 wide, and a tumulus, also artificial and probably built of earth removed from the former; there were found on it live oaks of 3 feet in diameter. Silver Spring, to which point the navigation of the Ocklawana is limited by low water, has many relics of ancient civilisation upon it—pottery, axes, arrow-heads, and all the marks of a dense population. Every river shows such marks. They are abundant on the rich lands of Marion and Alachua counties, in the hummocks of the Suwanee, on the Miami, St. John's, Indian River, and the Kissinee.

The characteristic of the artificial topography of the Florida tribes was a high pyramidal mound of earth resembling the Mexican *Teocallis* and the Egyptian *pyramid*, near a lake or river, and having stately avenues leading up to it or to an artificial reservoir, suggesting artificial irrigation upon a plan resembling the new Mexican acequias. The mounds here described appear to be something different from the large shell mounds explored by Prof. Wyman, which were formed solely by the accumulations of refuse food.

As remarkable as the pyramidal mounds and artificial lakes are the highways, about 50 yards wide, sunk a little below the common level, and the earth thrown up on each side, making a bank about two feet high. From the St. John's to the Keys, these mounds, reservoirs, and highways were visible a few years ago.

There are such mound cities near Lake Monroe and Lake Harney, besides those on Lake George. Blue or white glass beads are found, and small earthenware pyramids, with triangular bases, suggesting some symbol allied to the pyramidal *Teocallis*. Some human bones found in the mounds are those of men of large stature.

The northern tourist, as he drifts down the rivers, sees nothing of their antiquities. In order to find them it is necessary to penetrate the hummocks, and have an eye for detecting the difference between a natural and an artificial elevation.

A PIGMY GRAVEYARD IN TENNESSEE.

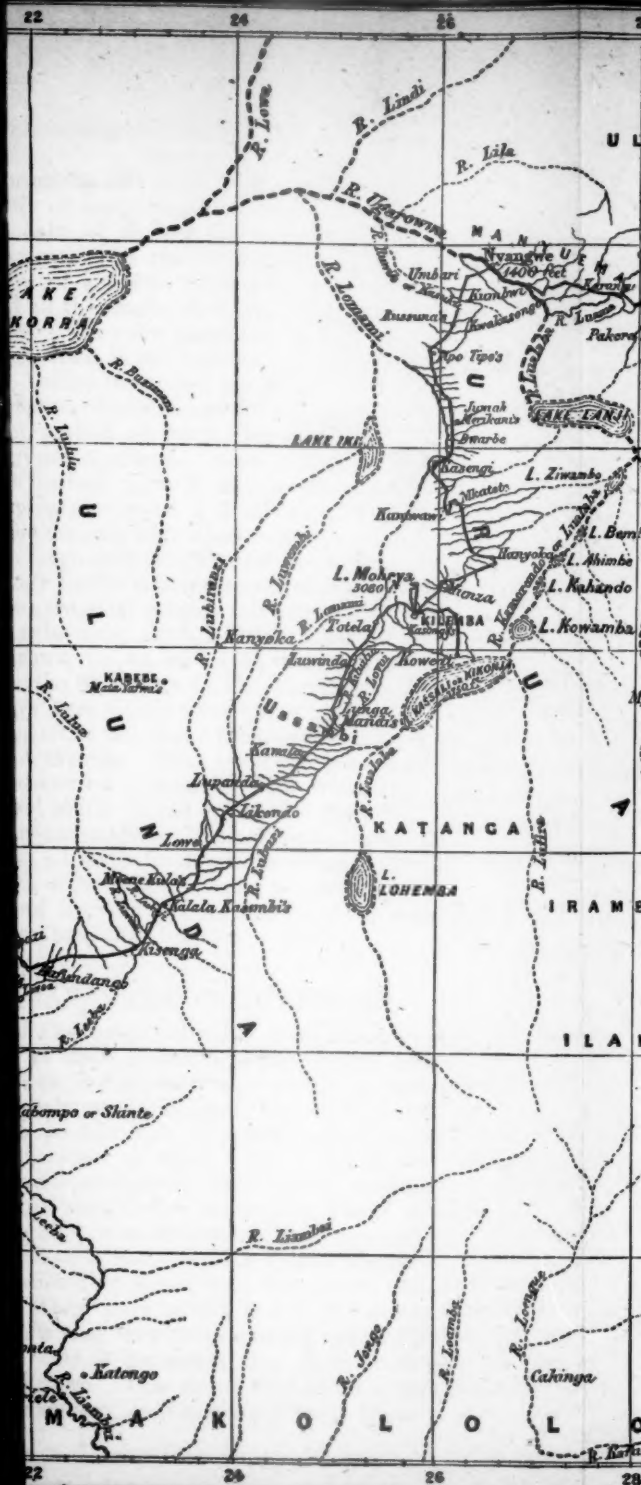
An ancient graveyard of vast proportions has been found in Coffee county. It is similar to those found in White county and other places in Middle Tennessee, but is vastly more extensive, and shows that the race of pigmies who once inhabited this country were very numerous. The same peculiarities of position observed in the White county graves are found in these. The writer of the letter says:—"Some considerable excitement and curiosity took place a few days since, near Hillsboro, Coffee county, on James Brown's farm. A man was ploughing in a field which had been cultivated many years, and ploughed up a man's skull and other bones. After making further examination they found that there were about six acres in the graveyard. They were buried in a sitting or standing position. The bones show that they were a dwarf tribe of people, about three feet high. It is estimated that there were about 75,000 to 100,000 buried there. This shows that this country was inhabited hundreds of years ago."—*Woodbury (Tenn.) Press*.



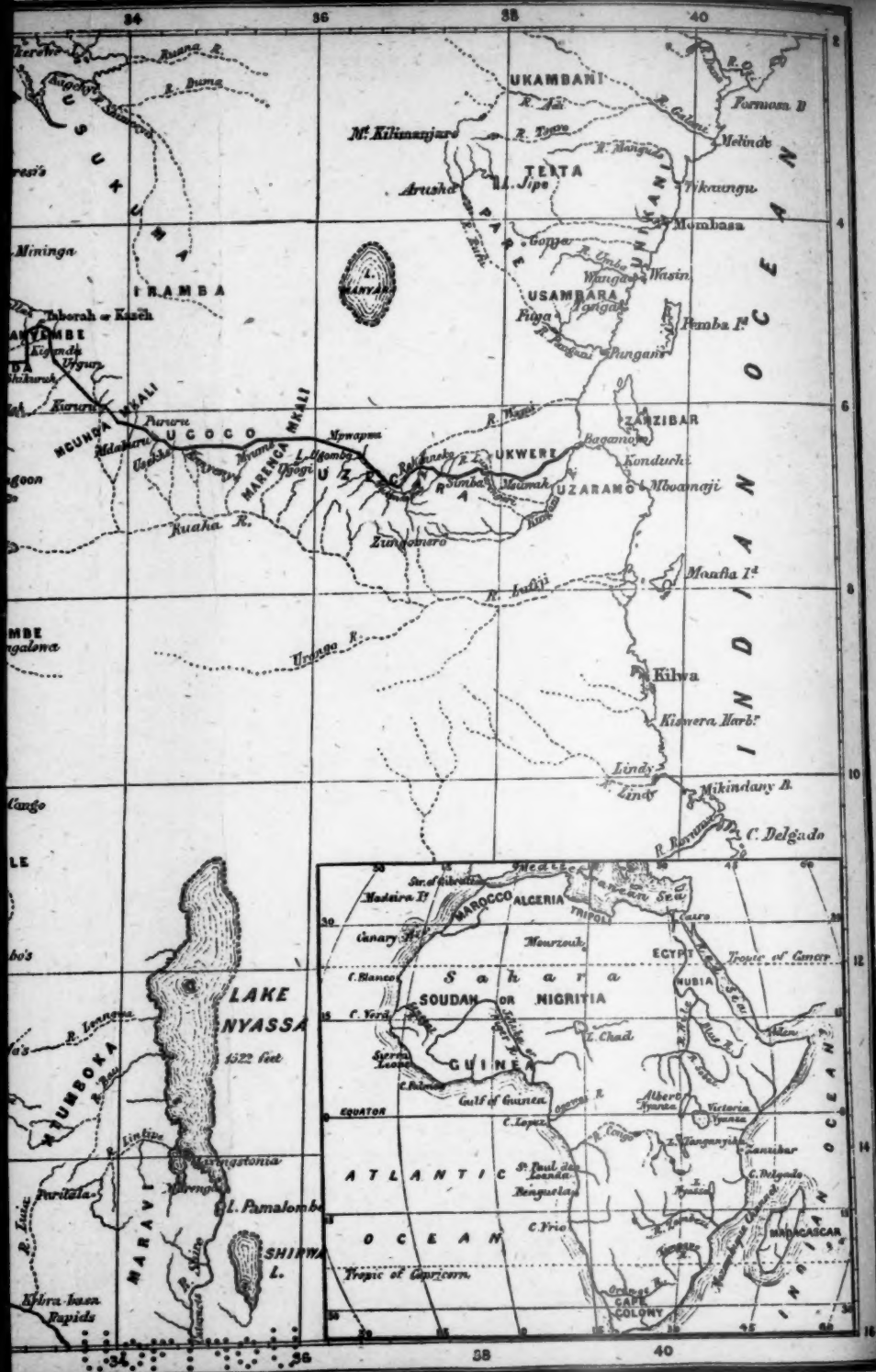
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THE JOURNAL
OF THE
ANTHROPOLOGICAL INSTITUTE
OF
GREAT BRITAIN AND IRELAND.

APRIL 11TH, 1876.

Colonel A. LANE FOX, F.S.A., *President, in the Chair.*

The minutes of the previous meeting were read and confirmed.

The Director announced the following new elections:—Mr. FREDERICK JACOBS, of Yokohama; Mr. H. O. WOOD, B.A., Magdalen College, Oxon; Rev. W. JACKSON, M.A., Worcester College, Oxon. The following honorary members were announced:—M. CARTAILHAC, of Toulouse; M. CHANTRE, of Lyons.

The following presents were announced, and the thanks of the meeting were voted for the same, viz.:—

FOR THE LIBRARY.

From the EDITOR.—*Materiaux pour l'histoire de l'homme*, for March, 1876.

From the SOCIETY.—*Transactions of the Society of Biblical Archaeology*. Vol. IV. Part 2.

From the AUTHOR.—*Sui depositi Antropozoici, &c.* By Ettore Regalia.

From the ASSOCIATION.—*Proceedings of the Geologists' Association*. Vol. IV. No. 6; *Annual Report do.*, for 1875.

From the AUTHOR.—*Anniversary Address, Geological Society, 1876.* By John Evans, F.R.S.

From JOSEPH SABIN, Esq.—*Catalogue of the Library of E. G. Squier.*

From the EDITOR.—*Revue Scientifique*. Nos. 40 and 41. 1876.

From the BERLIN ANTHROPOLOGICAL SOCIETY.—*Zeitschrift für Ethnologie*, No. 6, 1876.

VOL. VI.

I

From the AUTHOR.—Centrifugal Force, &c., Papute, 1875. By Thomas Croft.

From the EDITOR.—Nature to date.

The Director then read a note by Mr. JOARS (communicated by Mr. JOHN EVANS), on some proposed Archæological symbols for maps.

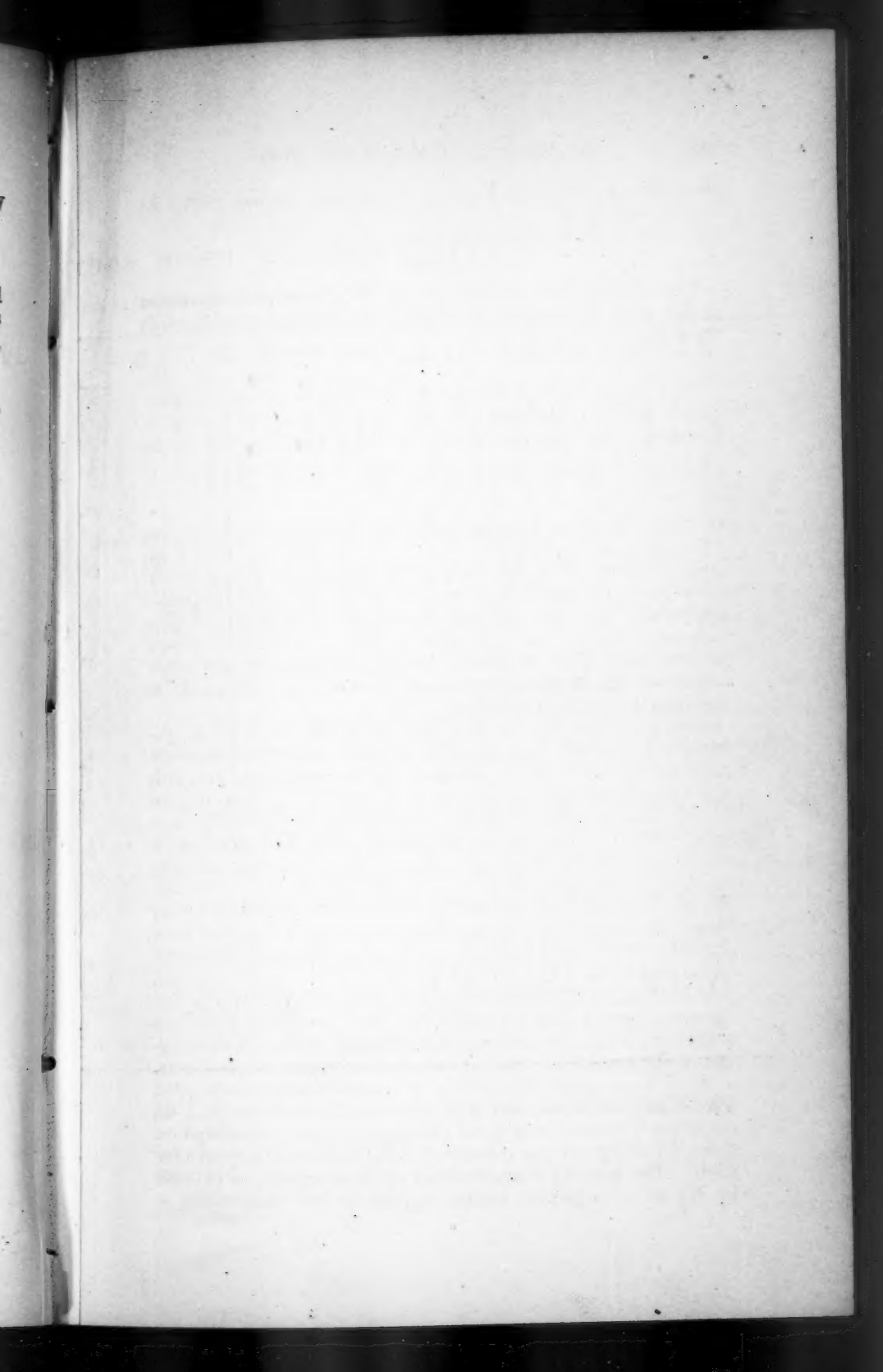
Dr. COMRIE, R.N., then read the following paper on the Inhabitants of New Guinea, and exhibited a large collection of weapons, works of art, articles of clothing, &c., from that island.

ANTHROPOLOGICAL NOTES on NEW GUINEA. By Dr.
COMRIE, R.N.

HAVING visited, while belonging to H.M.S. "Basilisk," in 1874, that portion of New Guinea lying between East Cape and Astrolabe Bay, and finding the Aborigines living in the Stone Age, and having previously to the visit of the "Basilisk" apparently had no communication with Europeans, I was induced to make some brief notes of their manners and customs, to form a collection of crania, weapons, implements, and other objects of ethnological interest, which are now submitted for the information of the Society.

Crania.—These, fifteen in number, were collected in the neighbourhood of East Cape, on the mainland, and the immediate adjacent islands. As will be observed, the lower jaws are, with two exceptions, wanting—an omission not arising from neglect in collecting, but owing to the lower jaw being used by the Papuans as a bracelet, a band of grass connecting the rami completing the circle. These ornaments, of which several are shown, are very much prized by their possessors, and were very difficult to procure. As far as could be ascertained, the body is first buried, and after some considerable period has elapsed it is taken up, the head and two upper vertebræ (axis and atlas) removed, the trunk being re-buried. The skull is cleaned, and in some cases put past on the roof of the dwelling, wrapped up in plantain leaves, in others thrown into the woods, the lower jaw being made into a bracelet, while the vertebræ are attached to the end of a pig-tail (specimen shown), and so worn by their fortunate possessors.

As I have appended a table of measurements, made after Prof. Busk's method, and with his valuable instrument, I do not deem it within the scope of this paper to enter minutely into those, referring any one interested to the table, which speaks for itself. The general characteristics of these crania, as evinced by the more important indices, appear to be:—*Latitudinal.*—



PAPUAN CRANIA FROM SOUTH

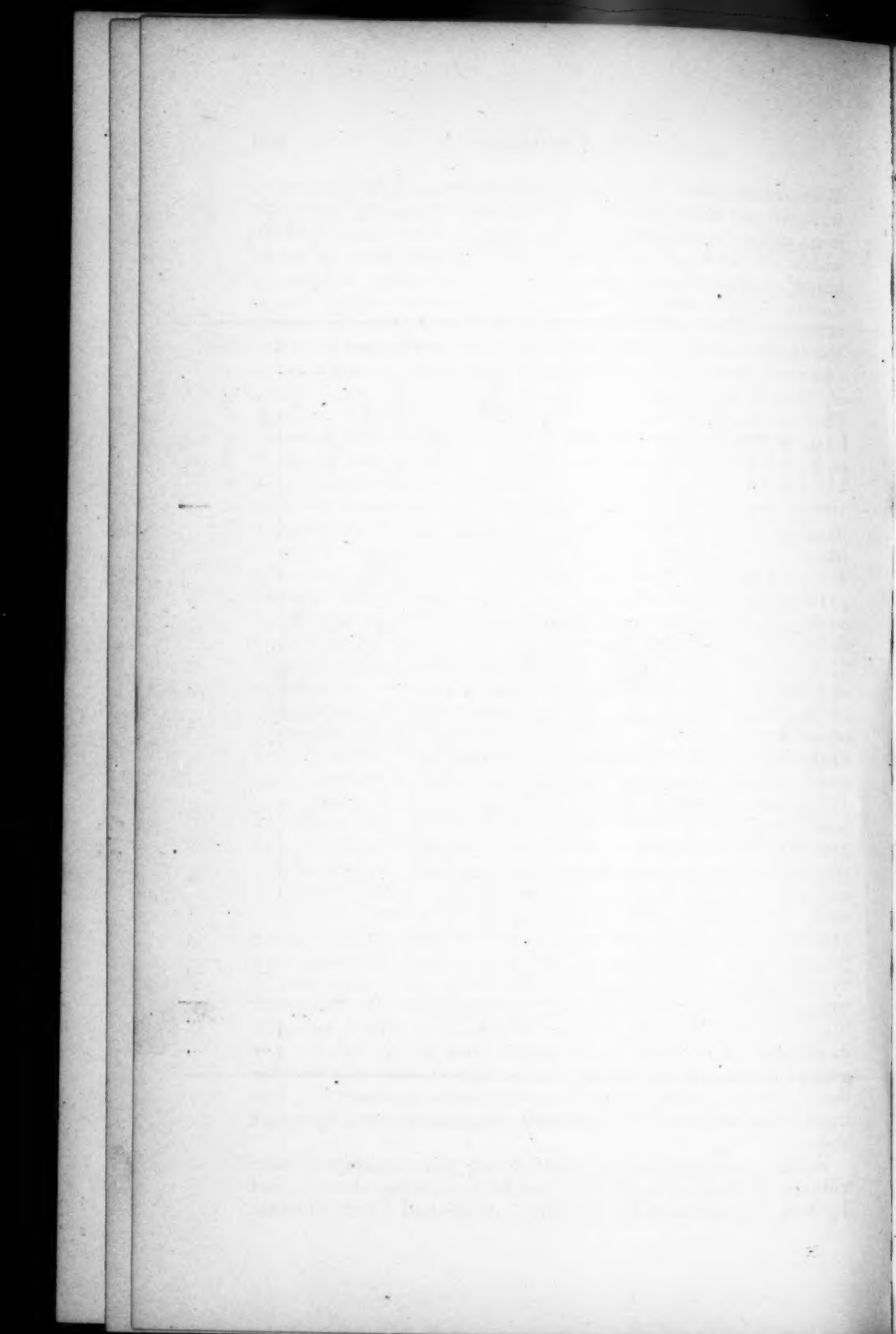
Collected and measured by P. COMPTON

PLACE.	Alphabetical Nos.	Sex—Presumptive.	Age.	Cubic Capacity in Inches.	Extreme.			Greatest Breadth.					Radii.						
					Length.	Breadth.	Height.	Frontal.	Parietal.	Occipital.	Zygomatic.	Inter Orbital.	Palatal.	Maxillary.	Fronto Nasal.	Frontal.	Vertical.	Parietal.	Occipital.
Lydia Island	A	M.	Adult	83	7.3	5.3	5.5	4.3	5.1	4.2	4.9	1.5	1.3	4.2	3.9	4.6	4.9	5.1	4.3
China Straits ...	B	M.	"	78 app	7.1	5.	5.4 app.	4.3	5.0	3.8	5.	1.2	1.4	4.1	3.8	4.5	4.7	4.8	3.9
Lydia Island.....	C	M.	"	65	6.8	4.6	5.4	3.8	4.5	3.7	4.3	1.1	1.4	4.1	3.7	4.3	4.4	4.5	3.9
D'Entrecasteaux Island.	D	F.	"	89	7.	5.4	5.7	4.4	5.3	4.1	5.	1.3	1.5	4.	3.4	4.2	4.7	4.8	4.2
Do. (Tub Bay)	E	M.	"	72	6.9	4.9	5.3	4.1	4.9	4.	4.6	1.	1.3	4.1	3.7	4.4	4.6	4.7	3.9
Do.	F	Ind	"	75 app	6.6	5.3	5.6	4.2	5.2	3.8	4.8	1.1	1.5	3.7	3.4	4.4	4.7	4.8	3.8
Riche Island— (Traitor's Bay)	G	M.	"	64 app	6.3	5.1	4.9	4.2	5.	3.8	4.8	1.3	1.4	4.	3.6	4.2	4.4	4.4	3.8
Lydia Island	H	M.	"	74	7.	5.	5.5	4.1	5.	3.9	4.9	0.9	1.6	3.9	3.6	4.3	4.7	4.8	4.3
Do. do.	I	Ind	"	76	6.9	4.8	5.6	4.1	4.8	3.8	Broken	0.9	1.1	4.1	3.6	4.4	4.8	4.8	4.
Moresby Island...	K	F.	"	69	6.6	4.8	5.3	3.9	4.8	3.6	4.5	1.5	1.5	3.9	3.3	4.	4.4	4.5	3.7
S. E. Cape	L	M.	"	68	6.7	4.8	5.2	3.7	4.8	4.1	4.8	1.1	1.4	4.	3.5	4.1	4.5	4.8	3.9
Teste Island	M	M.	"	84	7.1	5.1	5.5	4.3	5.1	4.	4.6	1.	1.4	3.7	3.5	4.6	4.9	4.9	4.1
Skelton Island ...	N	M.	"	80	6.7	5.1	5.5	4.2	5.	3.8	4.9	1.2	1.3	4.	3.7	4.3	4.6	4.7	3.8
Lydia Island	O	M.	"	74 app	6.7	5.4	5.4	4.3	5.4	3.8	4.8 app.	1.	1.2	3.6 app.	3.5	4.3	4.8	4.9	3.7
Possession Bay ...	P	F.	"	Broken	6.9	4.7 p	4.8 app.	3.9	4.7	3.4	4.7	0.9	1.4	4.1	3.7	4.2	4.5	4.5	3.8
Sums	15	10 3	Male. Female	104.6	102.6	75.3	80.6	61.8	73.6	57.8	66.6	17.0	20.7	59.5	53.9	64.8	69.6	70.2	58.
Means .....	...	2	Indeter- minate	7.5	6.8	5.	5.4	4.1	4.9	3.9	4.8	1.1	1.4	3.9	3.6	4.3	4.6	4.7	3.9

M SOUTH-EAST COAST NEW GUINEA.

Measured by P. COMRIE, Staff-Surgeon, R.N.

Radii.				Length.		Longitudinal Arcs.				Transverse Arcs.				Horizontal Circumference.	Proportion Length = 100.					Nasal.		
Frontal.	Vertical.	Parietal.	Occipital.	Palatal.	Bas Cranial.	Frontal.	Parietal.	Occipital.	Sum of 3.	Frontal.	Vertical.	Parietal.	Occipital.		Of Breadth.	Of Height.	Occipital Radius	Fronto Nasal.	Maxillary.	Facial Angle.	Length Max.	Breadth Max.	Proportion Length = 100.
4.6	4.9	5.	4.3	2.2	4.2	4.9	5.3	6.	16.2	12.4	12.7	12.6	9.4	20.3	72	75				2.	1.1	55
4.5	4.7	4.3	3.9	1.6	Broken.	5.1	4.9	6.2	16.2	12.	12.8	12.8	8.6	19.6	70	76				2.1	1.1	52
4.3	4.4	4.3	3.9	2.3	3.9	4.4	4.8	5.9	15.1	11.6	11.2	11.8	7.6	18.2	68	79				1.8	1.	55
4.2	4.7	4.3	4.2	2.1	Broken.	4.6	5.1	6.2	15.9	11.4	12.6	13.	8.8	19.9	77	81				2.	.9	45
4.4	4.6	4.7	3.9	2.3	3.9	4.6	5.3	5.5	15.4	12.	12.2	12.6	8.8	18.6	72	77				2.	1.	50
4.4	4.7	4.8	3.8	2.1	3.7	4.9	5.4	5.1	15.4	11.8	13.	12.8	9.	19.	80	84				1.6	1.	56
4.2	4.4	4.4	3.8	2.2	3.8	4.5	4.9	Broken.	...	11.6	12.3	12.6	8.6	18.4	81	77				1.9	1.	52
4.3	4.7	4.3	4.3	2.2	3.8	4.8	4.9	6.3	16.	11.6	12.6	12.6	9.	19.1	71	78				1.9	.9	47
4.4	4.8	4.3	4.	2.3	3.7	5.	5.1	5.7	15.8	11.6	12.4	12.6	8.6	18.8	71	79				2.	1.	50
4.	4.4	4.5	3.7	2.1	3.5	4.7	5.1	5.4	15.2	11.	11.6	12.4	9.	18.2	73	80				1.8	1.	55
4.1	4.5	4.6	3.9	2.2	3.5	4.5	5.3	5.6	15.4	10.6	11.6	12.	10.	18.5	72	77				1.7	1.	59
4.6	4.9	4.3	4.1	2.1	3.7	5.3	5.4	5.7	16.4	11.8	12.6	12.8	8.8	19.2	72	77				1.7	1.	59
4.3	4.6	4.7	3.8	2.1	3.6	4.9	5.3	5.4	15.6	11.9	13.	12.8	8.6	19.1	76	82				2.1	1.	47
4.3	4.8	4.9	3.7	Broken.	3.4 app.	5.1	5.	5.4	15.5	12.	12.8	13.	8.4	18.7	80	80				1.8	1.	55
4.2	4.5	4.3	3.5	1.8	Broken.	4.7	5.	Broken.	...	11.4	12.	12.3	9.4	19.	68	70				1.8	.9	50
64.8	69.6	70.7	58.8	29.6	44.7	72.0	76.8	74.4	...	174.7	185.4	188.7	132.6	284.6	1103	1172				...	...	...
4.3	4.6	4.7	3.9	2.1	3.7	4.8	5.1	5.7	...	11.6	12.4	12.6	8.8	19.	73.5	78				...	...	...



With one exception, G, they all may be classed as dolichocephalic, while G may more probably be called sub-brachycephalic; the mean index for the whole number being 74, thus bringing them within the limits of well-marked dolichocephalicism, or long-headed skulls, and although considerable individual variation is shown, still the aberrant tendency is no stronger here than as evinced in other collections, such as those of V. Baer, B. Davis, Meyer, &c. *Altitudinal*.—As regards this index, they all come under the head of what Broca calls megasemic, giving a mean of 78, and thus showing a strong affinity to the negro type. There is also here one exception, P, but which, owing to the base being broken, the measurement of the height was only approximate, and in this way does not count for much. *Nasal index*.—There is here a considerable variation not bearing out Broca's views, seven only being platyrrhine, five mesorrhine, and the remainder leptorrhine. *Capacity*.—This ranges in amount from 64 cubic inches up to 83, giving a mean of 75. *Prognathism*.—This also varies, but in the majority is pretty strongly pronounced. *Peculiarities*.—In A, synostosis of the sagittal suture has taken place, and has given rise to a scaphocephalic deformity. Wormian bones occur in the lambdoidal sutures of E, F, and G. The occipital protuberance is strongly developed in C and O, while the parietal is equally so in D. The denticulation of the sutures generally are more complex than usually occurs in savage races. Generally the result of the measurements would show the strong affinity of the Papuan to the Negro, and not at all favouring the idea of an intermixture with the Polynesian element. Since examining my own collection I have compared the measurements with those of Dr. Meyer, as given in the catalogue of the Dresden Museum (as far as the true Papuan crania are concerned), of which he gives twenty-three collected in Geelwink Bay, the mean latitudinal index being 72, while of ten in the College of Surgeons the mean is 74. The general type of skull is that of an extended, but narrow and compressed form, forehead small and low, occiput flattened, and zygomatic space not extensive. The top in all is ridge-like, a well-marked sagittal crest being perceptible. The temporal lines are well defined, and the superciliary ridges strongly developed. The upper teeth project over lower, but are not ground down, and are strong and in a good state of preservation. The height of the skull in all exceeds the breadth. The nasal bones are short and depressed, the anterior nasal openings wide.

Stature.—As the result of about twenty measurements of individuals, all male, I found the height to average about 5 feet $1\frac{3}{4}$ inch, the extremes being 4 feet 7 inches and 5 feet 4 inches.

The mean length of arm averaged 29 inches. The girth of the upper arm $9\frac{1}{2}$ inches, of the forearm 10 inches. The length of leg 35 inches, girth of thigh 18 inches, of calf 12 inches. Circumference of chest $31\frac{1}{2}$ inches. The feet are flat, and legs inclining rather to be bow or sabre-shaped, the calf placed high; in all the large toe was long, and stood out at an angle from the foot, more like a thumb, being capable of abduction and adduction, and the prehensile power thus possessed was frequently manifested in seeing natives attempting to walk off with small objects (to them of priceless value), such as nails, or small pieces of iron lying about the decks, while the attention of the sailors was supposed to be relaxed. The chest was, as a rule, well developed, and capacious in proportion, much more so than the limbs. They appeared to climb trees with great facility, planting the soles of the feet flat against the tree, and alternately in ascent apposing the planes of the hand and soles of the feet, without approximating either chest or legs, and in this way rapidly ascending the smooth branchless trunk of a cocoa-nut tree on all fours, like a cat.* Their favourite attitude was squatting with the hams against the heels, in which position the coccygeal portion nearly touched the ground. While standing, a common position was with one arm across the back, grasping the opposite upper arm. Their gait was shuffling, and in running they were easily beaten by our sailors, and in lifting weights or throwing heavy stones, they were very inferior to Europeans.

Hair.—Grows to about a foot in length, and is crisp and frizzly, in colour black, but often, owing to the use of burnt coral and wood ashes, assumes a reddish tint. The fashion of wearing the hair was varied; in most cases amongst males it assumes what may be termed a mop shape, while others cultivate cork-screw ringlets, and the natives about Huon Gulf and Astrolabe Bay cover it with clay and leaves interplaited, while at Lesson Island it was drawn out to a point at the crown, and confined in a conical case. The true Papuan dandy, however, wears it frizzled out in an immense mop, which is carefully combed out for hours daily, and at night is kept free from disturbance by the use of a wooden block as a pillow, of which specimens, elaborately carved, are shown, on which only the nape of the neck rests. A long comb with flying streamers inserted into the back hair, and a hibiscus blossom placed over the right ear, complete this, the main part of the toilette (specimens of combs and pillows shown). The women and children have their hair closely cropped, the latter often shaved, at least up to the

* "On road the white man walks with creaking shoes,
He cannot walk up trees nor his finger feet use."

Translation of Native Song in Mitchell's expedition to Eastern Australia.

age of about ten or so, about which time the rite of circumcision takes place; after which, in boys, the hair is allowed to grow and carefully tended. In some places the women wear false fronts and also ringlets. The assertion is constantly made that the hair, in the case of the Papuan, grows in tufts: this I have been unable to verify, as in the case of the women and children, where the hair was kept close cropped, no trace of this could be seen, although I frequently looked for it. No doubt in those wearing the hair in ringlets, some such appearance is noticeable, but is entirely owing to artificial means. Having collected numerous specimens of hair while on the coast of New Guinea, I was desirous to ascertain whether Pruner Bey's account of the microscopical appearance of Papuan hair was correct. The microscopical appearance, as seen longitudinally, may be described: Cortex more or less transparent, the pigment appearing absent from cortex and confined to medulla—an appearance not usual in the strongly pigmented hairs of white races. Seen transversely, the section is elliptic and flattened, and borders irregular, one of the sides appearing curved inwards at several spots. This gives a distinctive tape-like character, which, as Pruner Bey states, denotes the greatest flattening he has seen on human hair, and quite different to other races in which the section is more or less oval—a point of great significance.* The beard is scanty and crisp, in most cases plucked out and shaved; and as regards the body, with exception of the back of the neck and back, there is no great amount of hirsuteness.

Physiognomy.—Forehead narrow, and compressed at temples, superciliary ridges very prominent, nose aquiline, expanded at alæ, the tip being somewhat elongated, and hiding the upper lip, mouth large, lips thick and protruding, eyes large but superficial, upper row of teeth slightly projecting over lower.

Skin and Colour.—Since Mariner's time, the Papuan skin has been described "as peculiarly harsh." This is not accurate, and only applicable to those suffering from what is known as "Tukelau ringworm"—a very prevalent disease all over the Pacific, giving rise to a scaly condition of skin. I had, while serving in H.M.S. "Dido," a very good opportunity of studying this disease, as affecting natives of New Ireland, while it appears to be endemic as in New Guinea, although the name is derived from Bowditch Island, otherwise called Tukelau, one of the Line Islands, and is a name generally applied to the Line Islanders. As regards colour, the natives of the S.E. coast of

* Through the kindness of Professor Broca I had lately in Paris numerous transverse sections of Papuan hair made by a new process, with which I had hoped to have illustrated this part of the paper, but I have been unable to get the drawings prepared in time.

New Guinea may be said to vary from rusty black to a yellowish brown, while the natives of the immediate neighbourhood of East Cape are of a lightish brown, giving rise to the impression that there has been some intermixture of blood with the lighter Polynesian race, such as is the case in Fijii, where a cross has taken place with the Tongan. This is so probable and easy a solution, that one felt very much inclined to adopt it, especially at first, but after observation, noticing in the same villages and apparently in the same family, individuals exceptionally dark, the features and hair even in the lighter individuals remaining unaltered (which is not the case in the crossing of the Tongan and Fijian, where the hair becomes much less frizzled), I was forced to the conclusion that the lighter coloured people were the same race. All over the Pacific you find a difference in appearance between coast and bush tribes, such as occurs between the interior Indians of N. America, who live by hunting, and are much darker than the fish-eating coast tribes. If the opinion of the more advanced anthropologists is of any value, viz. that hair, next to language, is the most unerring indication of race, then the identity of the light and dark Papuan is the same, as the hair in both is equally flattened and tape-like, the amount of flattening being so evident that it can be observed with a common lens. As regards the colour of the irides, this varies from black to brown, the sclerotic in all being somewhat of a turbid or yellowish colour. I may also add that a Malay intermixture will not account for change of colour, as we found the higher we advanced up the coast, and the nearer to Malay occupation, the Papuan to become much darker, more negroid in aspect and savage in disposition.

Diseases.—Those observed were elephantiasis affecting the scrotum and lower extremities, the form of ringworm already referred to, and which is believed to arise from the deposit of the larvæ of some dipterous insect: as good observers have stated, swarms of flies have been seen to emerge from the diseased patches, at least this is stated to be the case in Samoa. A few cases of lupus were noticed, and at Humboldt Bay, unmistakable evidence of syphilis presented itself in shapes of scars on penis, buboes, and cicatrices in groins, the scars being of a lighter colour than the surrounding integument. A few spear-wounds were seen, jagged and torn, and traces of attempted Talicotian operations, where the lobe of the ear had given way under its load of ornaments, and where the edges had apparently been rawed and brought together.

Government and Religion.—In regard to this head very little information could be procured. Each village seemed to be independent and have its own chief; no buildings appeared to be

set apart for any public purpose, and with exception of a small wooden figure generally stuck up in the gable end of the houses, there was no trace of anything approaching idols, or even fetishism. As, however, in some cases bones and skulls, carefully wrapped up, were found in the houses, this may be taken for what it is worth, as regards some form of worship of ancestors, which certainly exists in other Papuan islands, such as Vate or Sandwich.

Dwellings.—These are almost invariably raised upon piles from 10 to 25 feet high, even when built upwards of a thousand feet above the sea level, the position of many of the villages taken in all probability to avoid the malaria of the coast, or for purposes of defence. The gable end where the principal entrance is situated faces the sea, and has a platform in front where the men spend the most of their time. At the other end is also a door and platform used by the women. Access is had to these platforms from without by notched logs. Over the principal entrance is hung bones and skulls of the dugong, turtle, pig, marsupial bones of kangaroo, cuscus, &c., all attesting the wealth of the owner, as showing the amount of provisions he has thus got through, while sometimes human skulls are hung up as indications of his prowess as a warrior, as also of anthropophagic propensities. The interior has no partition, but consists of one apartment occasionally divided by mats hung up, the furniture generally consisting of cocoa nuts for drinking out of, baskets for containing food, large coarse dishes of earthenware for cooking purposes, a wooden pillow or two made out of pieces of solid wood and quaintly carved. Against the wall are arranged spears and clubs, and fishing nets; while in the centre a fireplace is built up of stones on which the cooking is done, the floor being laid with small planks with wide interspaces allowing all rubbish to fall through. The taste of the individual is often conspicuous in many little arrangements, such as stands with hooks for hanging up baskets and other articles, made out of the lopped branches of a dwarf stem, not unlike what we have in our own halls. The only domesticated animals observed were a dun-coloured dog of a wolfish appearance, with long ears and a sharp muzzle, not barking, but giving utterance occasionally to a most dismal howl; the dogs are fed here, as elsewhere in the Pacific, on cocoa nuts, which may account for the long sharp muzzle they all have got; varieties of cuscus, kept as pets, and trained, I was informed by eye-witnesses, to search for vermin in the capillary decorations of their proprietors, abounded in every village. I cannot, however, speak as to this accomplishment from my own observation. The only other domesticated animal was the pig, which was almost allowed to run wild and

was tolerably numerous. The villages were often situated some distance above the sea level and surrounded by groves of cocoa nuts, and where at some distance from the sea, temporary huts existed on the coast for the purpose of residence while fishing and shell collecting: these were much less elaborate in their construction, and not built upon piles.

The canoes all had outriggers, and were frequently of considerable size and length. When from 30 to 40 feet in length, not an uncommon size, they were constructed of a single tree hollowed out, the sides, bow, and stern being built up with planks, the stem and stern having carved figure-heads generally of a bird resembling the cassowary; a raised platform was built amidships, on which the chief was seated, and here also were placed the cooking utensils of earthenware. The sail was of cocoa-nut matting, hoisted up to blocks most elaborately carved to resemble human figures. The paddles were also carved, and were used in the standing position. Catamarans of hewn logs were also common.

Social Customs.—The usual sign of friendship was squeezing the nostrils with the forefinger and thumb of the left hand and pointing to navel with index finger of right, generally making one or two audible grunts during intervals, and sometimes a word was used like *vācōus*, but this was rare. On other occasions a dog was brought alongside, and its brains dashed out by taking it up by the hind legs and striking the head against the ship's side, while higher up the coast, waving branches of some kind of palm, and sprinkling the head with sea water, was the equivalent for peaceful intentions. On all these occasions the heralds put on a smile, child-like and bland. The expression of astonishment was a prolonged o-o-o, holding their breath, and stroking gently the left arm with the right. When angry they uncovered the canine teeth and spat, and frequently I have noticed small children alternately yell and spit when in our presence and alarmed. The mode of calling attention was by a prolonged hiss or vigorously striking the left forearm with the sharp edge of the right hand. When disgust was shown, as given rise to by the offer of tobacco or rum, they used to pout, or imitate being sick. Their great expression of friendship was walking hand in hand with those they took a fancy to, occasionally making presents, but always expecting something very much more valuable in return. When on shore they were always ready to supply us with cocoa-nut milk without expecting any remuneration, but alongside the ship a *quid pro quo* was always demanded.

Mourning was signified by the hair being cut short, blackening the face and body with plumbago, wearing no ornaments

except a wicker armlet on left upper arm, while in case of chiefs a series of cords made from *Rizomorpha* were worn round the neck and hanging over the shoulders like aiguillettes of French officers. The houses in which death took place were pulled down and nothing but the piles and platform left standing, on which the mourners congregated from day to day.

The forms of burial were of two kinds—in one a grave was made in the ground, the surface being slightly raised and planted round with crotons, in the centre of which space broken pottery was placed, while on some neighbouring tree helmet-shells and bunches of human hair were hung. In the other form an oblong box roofed over, and raised on piles about three feet from the ground, contained the body. Both forms of graves were often found in close proximity to one another, generally in the outskirts of the villages. The native name for grave was *vata*. They had great faith in a form of philtre or love charm, which on rare occasions was mysteriously shown, and on which a high value was placed, nothing short of an axe being accepted. It is an odoriferous gum, which they informed us required to be smeared over the face, after the use of which the opposite sex would deny them nothing. This was explained by characteristic signs, the native name being *Tūbāl*.

The custom of Tabu was in some places observed, carried out by twisting round cocoa-nut branches or placing cocoa nuts on the end of sticks stuck in the ground; nearly all deserted houses had a branch of cocoa nuts placed across the doors. Circumcision was general, and appeared to be performed by a straight incision through the dorsum of prepuce, there being no ablation of supernumerary skin or mucous membrane; the cicatrices left were very unsightly and did not speak at all highly for the surgical skill of the operator. There was no slavery noticed, such as is common in the Solomon Islands and New Ireland, and from what could be ascertained single wives were the rule, who seemed to hold their own, and were invariably consulted on all the trade transactions. They appeared intensely jealous of their women, and on first arrival at their villages the men invariably ordered them all away; not that they wished to go, as very often they could be observed peeping round corners, but after a time they were allowed to return, at first remaining at a respectful distance off, but in course of time by small presents of red cloth to the children we used to conciliate the mother, and in this way were ultimately admitted to the freedom of the village. On the whole they appeared amiable and good-natured, wily withal, and not indisposed to pilfer if they thought they were unobserved, and when detected gave back the article, very good-humouredly treating the matter

as rather a good joke. The division of labour was rather in favour of the men, whose duty seemed confined to house building, fishing, and management of canoes, while on the women fell all the agricultural work, carrying water, cooking, collecting shell-fish, and the general interior domestic economy. Cannibalism was undoubtedly practised, as on several occasions the wearers of lower-jaw bracelets went through the motions intimating that they had eaten the original owner, and on other occasions skulls and bones blackened by charring in the fire were seen. But whether cannibalism was only practiced in the case of enemies, those who had met a violent death or as an ordeal, could not be ascertained. Cannibalism is common in all the Papuan group, as while cruising through the New Hebrides and Solomon Islands, a native of Sandwich we had on board, who had acquired some knowledge of English, used to warn us against landing on certain localities, by saying, "He bad man there, he bite."

Dress and Ornaments.—The common dress of the male, as far as Humboldt Bay, was a T-bandage about 6 inches broad, and secured round the waist by a hair band, or one made from the Rizomorpha root. At Humboldt Bay nothing was worn by the men except a small gourd having an aperture into which the glans penis was inserted. The women wore as far as Huon Gulf a grass petticoat reaching from waist to knees, similar to the Liku of Fijii, being composed of separate strips, and which vibrated in a most ludicrous way when they walked. At Huon Gulf Tapa made its appearance, a strip of which was worn round the loins; sometimes an additional grass petticoat was worn over the shoulders. Tattooing was confined to the women, the pattern being a series of fine blue vertical lines, lace-like in appearance, over chest and abdomen; with exception of this decoration all other ornamentation was the property of the male. The description of one dandy of the period will suffice for all. To begin with, an enormous mop in the shape of a head of hair carefully combed and frizzled out about a foot in length. A comb with flying streamers of pandanus lace, and projecting about a foot, stuck in the crown, the name of the comb being "kōsi," and a hibiscus flower stuck on the hair over the left ear. Both ears being loaded with rings of tortoise-shell or carved pieces of cocoa nut, or a roll of green stuck through the aperture in the lobe. The septum of the nostrils perforated, through which is passed a piece of coral or bone, having also pendants, and known amongst sailors as a *spritsail-yard*. Round the neck rows of teeth, shells, and pieces of aromatic bark are hung; while on the left upper arm, bracelets of banana fibre or shell, into which is

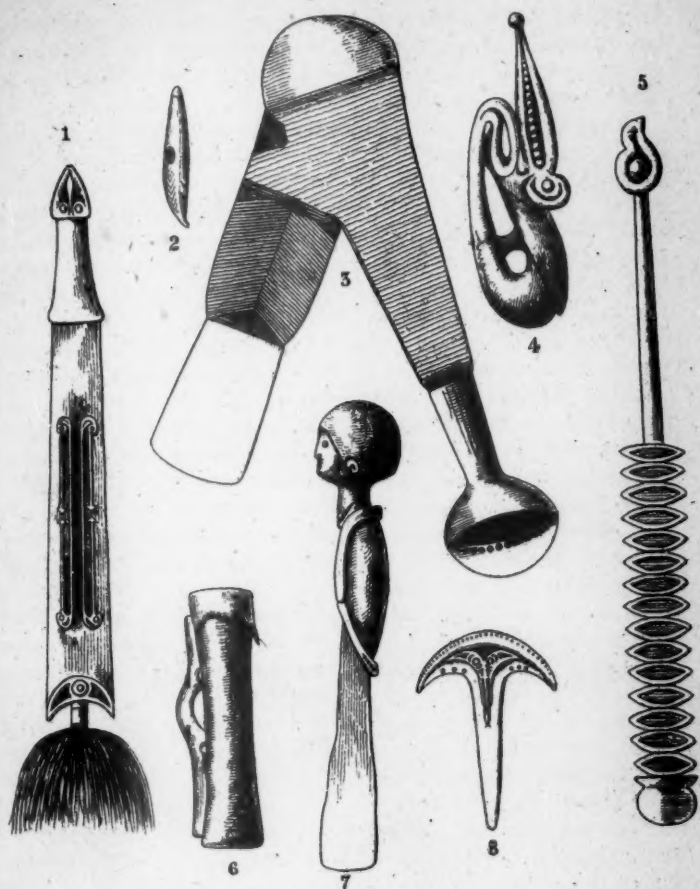
stuck an elaborately carved betel spoon, while over the same shoulder and in the arm-pit a small netted bag containing the betel box, holding the lime, pepper, leaves and nuts, and an obsidian knife, is placed, the ordinary T-bandages fastened by a girdle of ovula shells, kneelets and anklets of the same, and a few streaks of white and red paint over the face complete the get-up in the case of a commoner; while that of a chief had in addition a round plate of shells on the forehead, a long crimped pandanus leaf, treated somewhat as ladies do ribbons and attached to the bracelet on the arm, with a round shell worn over left groin, all of which were characteristic of rank. Of course there was individual taste displayed in choice of ornaments, such as cassowary and bird of paradise feathers, which in some places were worn as headdresses, and all displayed a great desire to obtain pieces of red cloth, which they twisted amongst their hair, and which they were always clamouring for, calling it "Tara-Tara."

Implements and Instruments.—All their tools were of stone, iron up to our arrival being unknown. They, however, soon found out the superiority of our tools, and were most anxious to possess any sort of iron, such as pieces of iron hoop, which they sharpened and hafted in the same way as their stone tools. These were of three kinds, an axe made of polished stone (nephrite) and set obliquely in a handle, frequently elaborately carved, adzes of the same material, and chisels; with the axes they cut off the branches of trees and chop through the bark, using fire for felling down, while the chisels were used as wedges, and the adzes to hollow out and trim the planks to the required form. At Lesson Island, adzes made from the *Tridacna* shell were obtained similar to those in use at Ualan and some of the Line Islands. To their own stone axes they applied the name of "tauchaman," but to ours "elam," iron being generally called "dim-dim." They carried their axes always with the handle on chest and stone resting on side of neck. The stone was apparently found in the beds of rivers, as on one occasion I was able to procure the unpolished material in its primitive form and water-rolled. The process of manufacture was rubbing down to the required shape on a piece of coarse sandstone, blocks of which were to be found in every village, grooved and scored from constant friction. As on this occasion the canoe from which the above were procured was loaded with adzes and axes in different stages as regards finish, the presumption may be hazarded that there is some attempt at division of labour or artizanship amongst this otherwise primitive people. The only musical instruments found were a drum made from the skin of a large lizard (monitor), called boila, Pandean pipes, two varieties,

a bamboo jews-harp, and a trumpet made by perforating a triton-shell; noises were also produced by striking the ground with pieces of hollow bamboo, with which they sometimes accompanied their songs.

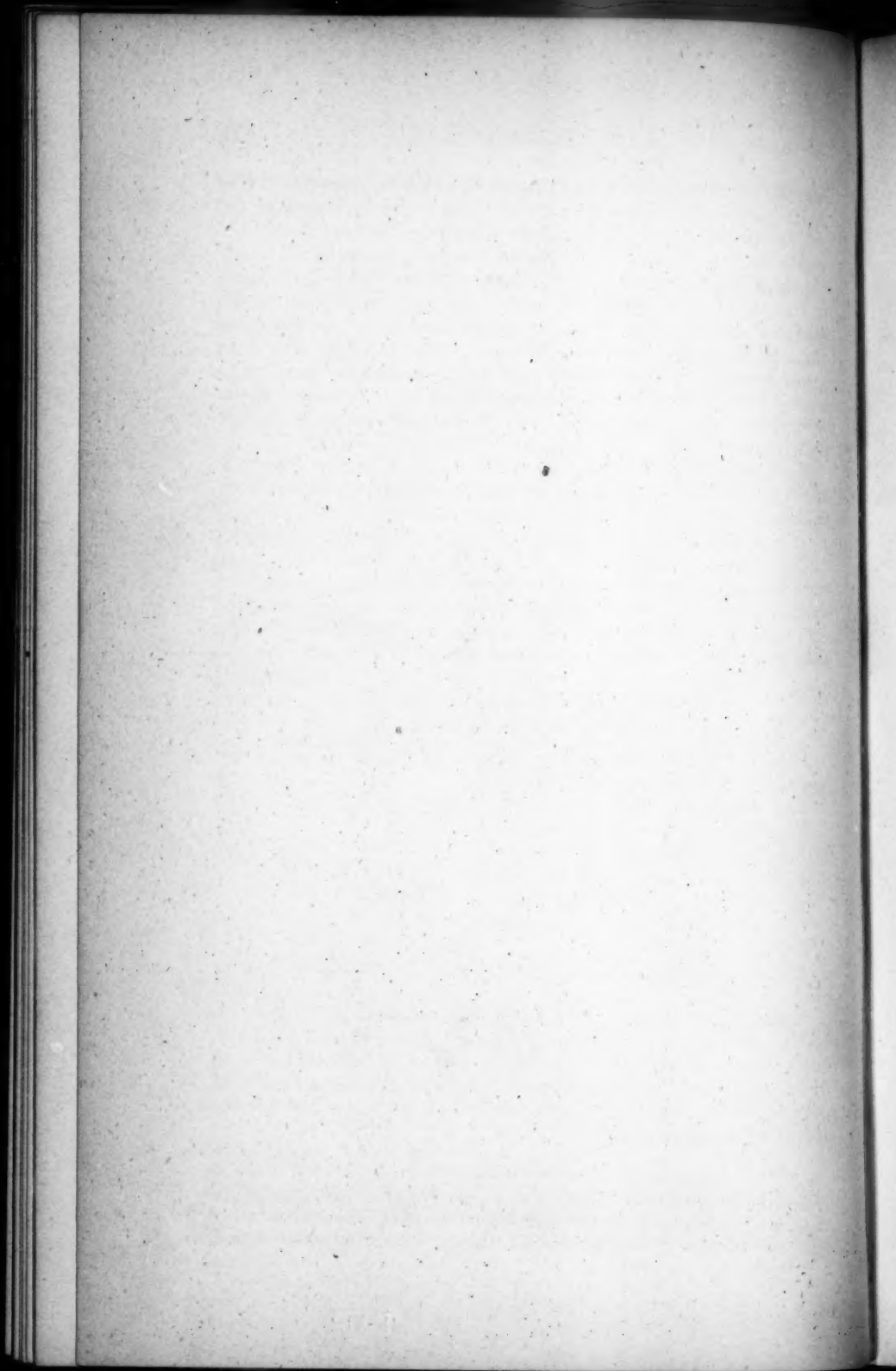
Weapons.—These consisted of clubs with stone heads, of three kinds, one disc-shaped, called "quepi," one round, and one stielate. A wooden club, resembling the patoo-patoo of the Maoris, called "yera"; a wooden sword called "sāmān"; a spear, about 10 to 12 feet in length, the point of wood sometimes barbed, and thrown from the hand with a quivering motion (no thrower in use) and called "kākfām"; slings made from the Rizomorpha or banana, and carried round the neck, the stones used being ordinary beach pebbles, the native name for the sling being "wam"; these and a wooden shield were the only weapons met with up to arrival in Astrolabe Bay, where bows 5 to 6 feet long first made their appearance, the string a split piece of rattan, and the arrow a reed of about 6 feet long, pointed with bone. When in use, one end of the bow was grasped by the right great toe—no poisoned arrows were seen. The only occasion when an attack of a warlike nature was observed, took place at Traitor's Bay, entrance to Huon Gulf, the attacking party advancing in two lines, one armed with spears, the other with clubs, carrying shields, singing a war song, blowing conches, and beating drums. A naval engagement was also witnessed off East Cape, in which only slings and stones were used, no attempt at either ramming or boarding taking place, the air being darkened with stones, neither party coming to close quarters, but both retiring in good order, after about half an hour's engagement. The traces of war were always to be observed by the decapitation of cocoanut trees, being the method adopted by the enemy for cutting off the supplies; but no extensive devastation was noticed, war being only between one village and another, extensive combinations not existing, a feature favourable as regards future colonisation.

Food.—On the slopes near the villages numerous small clearings were to be seen neatly fenced in, on which yams, sweet potatoes, saro, plantains, maize, and other esculent plants were cultivated. The ground was first cleared by fire, and then broken up by digging with pointed sticks, the latter being accomplished by female labour. The cocoa nut and sago palm being their principal stay, pig, kangaroo, cuscus, and turtle forming only an occasional addition to the bill of fare. In the main they appeared to be vegetable feeders, a sort of vegetable soup, composed of yams, plantains, grated cocoa nut, and sago constituting their usual noonday meal. This was prepared by heating over the fire in earthenware vessels, and



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was the only form of cooking practised, as far as observed. The spoon used was a valve of the pearl oyster, the native name for which was "kēnāi," pig was called "poro-poro," water "kai wan," and to eat "nam-nam." The use of betel was universal all along the coast, but no other form of stimulant was observed; tobacco in any shape they would not touch, and were evidently unacquainted with its use. They were also unaware of the preparation of palm toddy, so common among the Malays. Heaps of screw-shells were observed at the edges of lagoons, forming a sort of kitchen middens, and traces also of native encampments, resorted to at certain periods of the year, evidently to collect such food.

Such are the few notes I have attempted to throw together of every-day life, as observed amongst a primitive people where the introduction of civilisation has not taken place and effaced, as it has elsewhere, the condition of early childhood from off the largest portion of the world. I hope, in conclusion, that others, with better opportunities and increased knowledge, may explore further, without delay, this field, rich in survivals of primitive life, which will soon pass away with the improvements the colonist of the southern hemisphere brings in his train.

DESCRIPTION OF PLATE I. VOL. VI.

Objects from New Guinea.

Fig. 1.—Wooden sword or club, with plume of cassowary feathers at the end, carving on one side.

Fig. 2.—Gourd ornament, worn by the male natives.

Fig. 3.—Axe with green stone fixed into it.

Fig. 4.—Pulley used in boats.

Fig. 5.—Wooden sword or club.

Fig. 6.—Small drum, with head of iguana hide.

Fig. 7.—Carved wooden stirrer for sago.

Fig. 8.—Betel spoon.

Fig. 9.—Shield, with carved ornament and fringe of cowrie shells.

Many other objects, as pillows, human jawbone bracelets, combs, armlets, earrings, &c., amongst those exhibited, have been already figured in the voyages of H.M.S. "Fly," London, 1847, and H.M.S. "Rattlesnake," London, 1852, and also in a Dutch work, by the Netherlands Indian Commissioners, published at Amsterdam, 1862.

DISCUSSION.

Col. LANE FOX said: The present paper is, I think, one of the most valuable the Institute has lately received. It is not often that we have original observations upon an entirely new tribe.

and still less often are those observations made by so competent an observer as Dr. Comrie. Amongst the points most worthy of notice are the remarks upon the hair of this particular branch of the Papuans. We had been led to suppose that the hair grew in tufts like the bristles in a shoe-brush, but Dr. Comrie's observations tend to the view that this peculiarity was the result of the mode of dressing, and not congenital. His remarks upon the section of the hair appear to tally very accurately with the researches of Dr. Pruner Bey, which seem to show that the long-sectioned, tape-like formation is common, more or less, to the whole of the black, long-headed races of mankind, whilst that of the yellow round-headed Mongols is distinguished by a round section, and the Melanochroi by a more or less oval form, with greater or less varieties of elongation. We remember how, some time ago, anthropologists were amused by the coincidence noticed by Dr. Thurnam and others, viz. long heads in long barrows, and round heads in round barrows. Now, viewing the general tendency of the facts adduced in Dr. Pruner Bey's table of hair forms, it would almost seem as if we were coming to the conclusion of long heads, long sectioned hair, round heads, round sectioned hair. Dr. Comrie thought that the peculiar long form of the snout of the Papuan dog had been developed through natural selection, from their habit of feeding on the fruit of the cocoa nut; but if this were the case, we ought to find the cocoa nut largely distributed over the Arctic region, for the snout of the Esquimaux dog was of the same long form. Might we not rather attribute this to the fact that the dogs of savages, in all parts, were of an earlier or less cultivated type, and showed more affinity to the wolf than the more civilised specimens of the canine race. Dr. Comrie noticed that in New Guinea, as in other islands of the Pacific, the coast tribes were fairer than the inhabitants of the interior, and he seemed inclined to attribute this rather to local causes, such as feeding upon fish, than to admixture of race; but although we must attach great weight to an opinion so carefully formed upon the spot, I think we must hesitate before accepting this conclusion. It may be remembered that not long ago Dr. Mullens, in an interesting paper on the inhabitants of Madagascar, noticed a somewhat analogous distinction between the colour of the coast and interior tribes of that island, the coast tribes being, however, in this case, the darker of the two. This Dr. Mullens was also inclined to account for by purely local causes, the inhabitants of the low, feverish coast districts having acquired a darker hue than the inhabitants of the interior highlands. But may we not here see another cause operating to produce this result? In Madagascar the immigrants from the continent of Africa were a black race, whilst in Papua the immigrants from the eastward were a light race. Hence the difference observable in the two regions, the coast tribes, being of necessity more exposed to the effect of crossing, approach in both cases to the colour of the immigrants. That such connection with foreign races has actually taken place in New Guinea follows, I think, as a certain result of the fact that

throughout Polynesia the canoes which conveyed the different races from island to island were of the same form, the outrigger, in one variety or another, being prevalent throughout. There is also an almost perfect identity in certain forms of ornamentation in New Zealand and New Guinea, which seems to afford proof that frequent intercourse between those islands must have existed in former times. One more point in Dr. Comrie's valuable paper we must notice here, his view that hair, next to language, is to be regarded as the surest test of race. I think it can hardly be admitted that language is in itself at all a test of race, although undoubtedly race and language must frequently have flowed in the same channels. Dr. Sayce has, I think, fully disposed of the view that language could be taken by itself as evidence of racial connection, in his paper upon that subject.

Mr. BOUVERIE PUSEY said: The account of the New Guinea dog, in the interesting and able paper which had been read, reminded him very much of the Australian dingo, and he wanted to know whether Dr. Comrie thought there was any connection between them; also whether the New Guinea domestic hog mentioned in the paper had any connection with a peculiar species generally supposed to inhabit New Guinea, and called *Papuiensis*.

Lieutenant ARMIT, R.N., said: Dr. Comrie, after rather numerous and exact observations, made while serving on board H.M.S. "Basilisk," has furnished this meeting with some most valuable anthropological notes on the natives of the south-eastern peninsula of the island of New Guinea. Not the least remarkable of the facts now brought to light is the "rite of circumcision," practised by the Brown Papuans, among whom Dr. Comrie's observations were made. In Australia, and I believe also in New Zealand, and in some of the islands of the South Pacific Ocean, this *historical rite*, if I may so call it, is not unknown. As far as I can learn, the Papuans are divided into four peoples, and each people is subdivided into tribes, which are constantly at war with each other, only uniting to resist the attack of the neighbouring nation, if I may so call them. These peoples are:—(1) The true Papuan or Frizzly Head of the west and south-west coasts; (2) The Alfoerer, or Hoorafora, forming the hill tribes of the interior; (3) The Brown Papuans visited by Dr. Comrie; (4) The Papuan-Malays of the north coast, subject to the authority of the Sultan of Tidore, and professing Mohammedanism. The following brief *resumé* of Dutch exploration during the present century may not be uninteresting. The geographical knowledge in our possession regarding New Guinea goes to show that the southern shores of that island abound in low swamps covered with mangrove trees, but that its south-eastern extremity and northern coasts are bold and steep, their cliffs plunging vertically into the waters of the Pacific Ocean to a depth at times measured by hundreds of fathoms. Stretching away from these cliffs into the interior are plains and plateaux which rise gradually to form mountain ranges with altitudes varying from 5,000 to 14,000 feet at some 30 to 50 miles from the coast. Beyond

these mountains still higher ranges exist whose summits are covered with clouds, which render it impossible to accurately determine their altitudes, which in places has been ascertained, as shown on the Admiralty chart 2,759A, to be over 16,000 feet. This high range forms the backbone of the island, and runs from Mount Owen Stanley (13,000) in the south-east to the Charles Louis mountains in the north-west, of which the most distant peak visible from the seaboard is 16,730 feet. To the southward these hills are obscured from view by a high coast range, from the foot of which some thirty or forty miles of mangrove swamp runs into the Torres Straits and Gulf of Papua. These mud flats are again cut up, by the streams descending from the mountains, into innumerable islands, and these streams, at times uniting, have cut wide estuaries for themselves into the sea. Off the mouths of these estuaries islands have in many cases been formed by the *debris* forced out by the river. In some places, such as Hall Sound, high islands, such as Yule Island, appear to have been thrown up by volcanic action. Such a locality must needs be a hotbed of fever, and all authorities on the subject agree in holding the southern coast of New Guinea to be unfit for European habitation. But the north and north-east coasts present fair prospects of affording both a healthy and pleasant climate. In 1828 the Government of the King of the Netherlands took possession, by proclamation, of 118 miles of the south-west coast of New Guinea, abreast of Port Essington, on the north coast of Australia. The Dutch corvette "Triton" was sent to survey the new territory, and was the first expedition to visit the island since the days of Captain Cook. It appears to have met with a very friendly reception from the natives, which was in strange contrast to the experience gained of this same people by the early navigators of these regions, if the names with which they baptised their principal discoveries can be taken to represent the treatment they received. Thus, one of the large rivers discovered in early days was called "Moordenaar," or "murderer;" another they named "Doodslaager," or "slaughterer." Captain Cook was little less fortunate when he visited its shores in the "Endeavour." Indeed, no record exists of friendly intercourse having been held by Europeans with the natives of the south and south-west coasts until the year 1828, when the Dutch Government, during one of those spurts of colonial activity which seem to attack western nations periodically, despatched the "Triton" to survey its newly-annexed territory, with a view to founding a settlement thereon. Reaching the western peninsula of New Guinea, this expedition discovered a remarkable range of mountains which rise nearly perpendicularly out of the sea to a height of 5,000 feet, and form a lofty backbone to the island, and which apparently runs through its centre from west to east, as it is again found in the south-eastern peninsula, where Mount Owen Stanley attains an altitude of 10,000 feet, and then gradually runs down into the Pacific Ocean in Milne Bay, lately surveyed by Captain Moresby, of the Royal Navy. The Dutch officers named this range the "Sneewe Bergen," or Snowy Moun-

tains, owing to three remarkable table-topped summits some sixty miles inland, computed by them to be 20,000 feet high, appearing to be covered with snow. This range creates a basin in the southern half of the island, within which the drainage from the mountains would form swamps and lakes, or lagoons. Should the coast range be a "broken range," these reservoirs would feed large rivers, such as that discovered by McFarlane, and named the "Baxter," while the reservoirs themselves would ever be replenished by the snow-clad summits, and impenetrable mountain sides arresting the warm, moist south-east trade wind of this region, which, having travelled over the South Pacific Ocean and absorbed all its rising vapour, would now find itself arrested in its course towards the Equator, and would then be forced to deposit its moisture over these very mountain slopes. This would account also for the extensive mud flats and mangrove swamps of the southern and south-western coasts of New Guinea, wherein the decomposing vegetable matter is of itself sufficient cause to produce epidemic diseases. It was on the south and south-western coasts that the Dutch Government determined on forming its first settlement; and in 1828 a landing was effected, at the urgent request of the natives themselves, in Triton Bay. The swampy nature of the land on which the fortified village was erected, and the oppressive nature of the atmosphere, owing to the inlet receiving no sea breeze, seem to have foreboded the fate of this Dutch settlement even before the garrison had been landed. It was abandoned in 1838, when the garrison was removed to Wahaai, a small port on the north coast of Ceram, which was much frequented by English and American traders. During the ten years that the Dutch remained in Triton Bay among the Outanata tribe of Papuans the most friendly relations existed between the two peoples. Theft was never heard of, and no single act of hostility ever committed. The presence of the Dutch was a check on the Malay, Chinese, and Ceramese semi-piratical expeditions which, under the guise of traders, periodically visited these parts, but who in reality were slavers and pirates of the lowest class. Since the European settlement on this coast was abandoned these expeditions have again made their appearance, but as they do not enter the Torres Straits very little is ever heard of them. In 1850 the Dutch Government, having purchased the right of "suzerainty" over the northern and part of the north-eastern coast of New Guinea from the Sultan of Tidore, sent Lieutenant Bruijn Kops, in command of the "Circe," and an expedition, to found a settlement in Humboldt Bay. This expedition was not successful, and all it did was to erect posts supporting metal shields embossed with the Netherlands coat of arms at various points along the coast. A gale from the south-east and the strong lee current which here prevails drove it back to the island of Gilolo. In 1852, however, the settlement was effected, and Port Humboldt was proclaimed a Dutch colony. The garrison of the new colony was ill-chosen. It consisted of a party of burghers, or native militia, of Sernate, a people by no means

calculated to inspire respect in the stalwart and energetic Papuans of this coast. In Triton Bay the Dutch had to contend against obstacles which no human force could overcome, but which human foresight might have avoided. In Port Humboldt the Dutch entered upon new ground. Here no obstacles barred their way to success, but the cruelty and rapacity of their boors so incensed the natives that a desultory war was the result. The natives of the coast were either butchered or were driven to take refuge among the hill tribes, to whom they became slaves, and the cruelty of the Dutch has thus become proverbial along the whole length of the north-east coast of New Guinea. These natives the English Government claims as its subjects, and yet they know it not, but live in daily fear of their sworn enemy descending upon them, unaware of the fact that an imaginary geographical line of demarkation protects them from the enemy they so much dread. When the Dutch first visited these parts they found the natives inclined to be most friendly, and were received with open arms. The following simple narrative of Lieutenant Bruijn Kops is most strikingly illustrative of the then existing state of feeling:—

One evening when we went on shore all the children of the village were collected together, and beads were thrown among them. Not only the children, but women, men, and even some of the chiefs scrambled for the beads, and ran from every quarter to obtain a share. All were on their knees in the sand, and showed how much they prized these presents by the zeal and attention with which they sought for them, and by their merry laughter when they were fortunate. Although these beads were of great value in their estimation, the scrambling was carried on without the personal contests which in civilised Europe would have been the result of an unequal distribution of presents. Walking along the beach after this distribution, I entered into conversation with a native who had learned a little Malay, and who invited me into his house, where I was led into the room which serves as a dwelling-place for the family. I thought all the women would take to flight, and was not a little surprised to find that they sat down close to me, and observed me very attentively, but without troublesome intrusion. Thus I sat in the midst of six women, three of whom were young, and whom, on account of their beautiful eyes, clear, white, and regular teeth, happy, laughing faces, round shoulders and arms, fine hands, beautiful bosoms, and well-formed limbs, deserved the name of beautiful, not only in the eyes of Papuans, but also in those of Europeans. The frankness with which I was received struck me, as it was entirely unexpected. They brought me a dish of *papeda* (sago-flour steeped in water), some roast fish, yams, and fruit, requesting me to partake of it, which I did to please them. Seeing a ring on my finger, one of the girls tried to draw it off to examine it, but not succeeding, I drew it off myself, and handed it to her. After examination it was returned to me with care. I mention all this because the familiarity with which I was treated astonished me, and gave me a very favourable opinion of these people.

Australia is separated from New Guinea by the Torres Straits, only some 80 miles broad. The geological formation of the southern portion of New Guinea is said to be identical in character with that of the Australian Continent. Thus, by reason of their proximity, and their possessing so many natural resources in common, these two island continents may be said to be one territory; and Nature herself seems to suggest that the power which already holds sovereignty over the one should also have dominion over the other.

Mr. Hyde Clarke and other members joined in the discussion, and Dr. COMBIE, in reply, said: Colonel Lane Fox's remark, that all over Polynesia the canoes had outriggers, was not quite correct, as the canoes of the Solomon Islands had no outriggers, and were large and well constructed, in fact, models of boat-building as regarded their lines and graceful appearance on the water. He was unable at present to answer the question as to whether the Papuan pig was a distinct species, or, as suggested by Professor Huxley, derived from the westward. He had, however, given a specimen of the skull to Professor Flower, whose opinion he trusted he would be able to state at some future meeting. With regard to circumcision, the custom appeared to be universal all along the south-east coast, and he believed the operation was performed with a piece of obsidian. The tree-climbing he had often seen, and no band was ever used round the body, but the natives seemed to run up like cats, no doubt aided by the great mobility and prehensile character of their toes, which enabled them to hold on without requiring to bring any other part of the body into apposition with the tree, except the hands and feet. With regard to Captain Lawson's book, he did not believe that there ever was such a person, or that he had ever been to New Guinea; the book was a myth and romance from beginning to end. He would only refer to one statement, that of ascending a mountain 25,000 feet high in a day. He need only appeal to anyone who had any Alpine experience, as to the wildness and improbability of this. Why, he had known, in ascending only 1,000 feet through what was considered open country (with exception of the dense grasses that towered feet above one's head, and in getting through which one's hands and face were cut to pieces), owing to the heat and moisture, the strongest men of the party exhausted and forced to rest before reaching the summit, nay, in many cases positively sick. As regards the Jewish descent of the Papuans, this statement was made of races in all parts of the world, and the early navigators and travellers were always looking out for traces of the lost tribes, in fact, he believed Dampier states there existed a white colony in New Guinea believed to be the identical lost tribes that have been so long an ethnological puzzle. As regards the dwellings pulled down on the occasion of a death, the stay of the ship was too short to admit of observing whether they were ever erected again. As regarded the language, he thought it strongly bore out the bow-wow and pooh-pooh theory, as the name for a pig was poro-poro, dog bow-wow, axe dim-dim, and eating nam-nam, all suggestive of onomatopœa.

Mr. Brabrook read the following paper for the author:

NOTES on the POLITICS, RELIGION, and COMMERCE of OLD CALABAR. By JAMES BROOM WALKER.

THE government of Calabar is an oligarchical government. Every district has its nominal king elected by the freemen, who

acts as the executive authority in his own district, and as the mouthpiece of the community in intercourse with other powers. These freemen, who constitute the chiefs, form a kind of privy council, which meets with the king daily, or as occasion requires. In consequence of the vast majority of the inhabitants of Calabar being slaves, the comparatively few freemen of the country would find it difficult, if not impossible, to govern with anything like effect, without the appearance of possessing some power superior to their own, hence the institution called *Egbo*, which is the supreme power in the country. The natives are not fond of communicating information to the Europeans in regard to this institution. They wish it to be considered a very sacred thing, and strongly endeavour to impress the slave population with the idea that it has a very intimate connection with the supernatural. The freemen represent *Egbo* to be a supernatural being, who lives in the bush, and whom they can summon to their aid on any emergency. Hence when they wish to proclaim any new law of importance, the parties making this proclamation are accompanied by a number of grotesquely dressed individuals, who are supposed to be emissaries from the great mysterious power residing in the bush, and frequently these same emissaries, who are known by the name of *Idems*, are summoned to inflict punishment for any violation of the *Egbo* law. The freemen of the different towns, and even those belonging to the same town, however much they may be at variance with one another on other matters, are remarkably unanimous in support of their *Egbo* institution. The principle of self preservation inspires unanimity. The whole institution is a striking illustration of the old adage that union is strength. The *Egbo* institution, divested of its mystery, seems to be a friendly society for mutual protection among the freemen. The internal economy of the friendly society, or *Egbo* institution, appears to resemble that of the *freemasons*, inasmuch as there are different grades. These are nine which belong to this institution, and are termed respectively, from No. 1, the highest, to No. 9, the lowest.

- | | |
|-------------------|--|
| 1. Nyampi | } 300 boxes brass rods, each £2 9s.
=£735, for the first four grades. |
| 2. Oku Akana | |
| 3. Brass | |
| 4. Makanda | |
| 5. Makara | } 50 boxes brass rods for each
of the lower grades. |
| 6. Mboko Mboko | |
| 7. Bunko Abonko | |
| 8. Mboko Nya Ekpo | |
| 9. Ekpe | |

Admission into all the grades is by purchase; the higher the grades the more costly. Only freemen are permitted to be purchasers of the highest four. The half freemen, that is, those who are born in the country of slave parents, are permitted to buy all excepting the four first. Purchased slaves can buy the two lowest grades. Europeans can buy all, the same as the freemen. The entire cost of the nine grades to a European is considered to be about from £1,000 to £1,300. The only advantage to a European trader purchasing *Egbo* privileges, if it can be called an advantage, is thus: The individual so purchasing them can give out goods on credit to the native traders, and if any one who takes the goods fails in making payment of produce as stipulated, he can summon *Egbo* to take possession of his house property and slaves, and dispose of them to realise the amount of debt due. The origin of this *Egbo* it is difficult to discover, as the great body of the natives themselves do not know. We have lost many of the traditions of our own country, and no wonder an unwritten history should be forgotten. The legislature of the country consists of the kings and chiefs, and without the influence of this *Egbo* institution would be powerless, as they have neither military nor police establishments to carry their decisions into effect, so that in point of fact *Egbo* is the only equivalent they have for a police force which the king and chiefs have at their command. There is one feature specially objectionable in this *Egbo* institution, which has been long reprobated by the missionaries and other Europeans residing in the country, namely, the flogging of the innocent women and slaves. It is thus: The *Egbo* runner frequently makes his appearance suddenly and unexpectedly in the town, having a large bell attached to his back, which is rung by his motion as he runs about to give signal of his approach, and he unmercifully flogs with a whip made of cowhide any one but those who have purchased the grade which he represents. The *Egbo* runner of the highest grade flogs even the freemen who have purchased the lower grades, in order to compel them to purchase the higher grades. The great object of the exhibition of the *Egbo* runners is to keep the slave population in awe of the *Egbo* power. All business must be suspended, which is another evil, and all the doors shut, and silence maintained through the town during the time that *Egbo* has possession of it, and when he takes his departure the town bell is rung in a peculiar way to intimate the same to the inhabitants, when business is resumed. The stoppage of business on these occasions may last for a day, and frequently two or three days, but in such cases it is suspended for an hour or two, to permit the daily market to be held, although at other times the *Egbo*

runners will rush out into the markets, disperse the people, and seize their goods.

Each grade of *Egbo* has its own king and officers, and the runners may be called out at any moment to parade the town, which means possession for the time being, without any warning being given to the inhabitants, which causes great confusion and destruction of property; those who may be coming from the market with head-loads of native produce or European goods, must throw them down, and run as it were for their very life, and if caught, get flogged, it may even be to death; such cases have been known. European influence, however, has tended to mitigate this evil considerably, as well as many others.

From the foregoing remarks on the *Egbo* institution, you will have gathered that it is admirably fitted for the purpose in view, to wit, the keeping of the slave and female portion of the community in subjection. The impression that there is a mysterious power which can be invoked at any hour, for the punishment of rebellious slaves and fractious wives, must have an influence on their conduct which, in the present state of society, could not be obtained otherwise. However, it would be much for the benefit of the country were this system of oppression abolished and just laws instituted in its place. I have thus endeavoured to give you an idea of the politics of the country, and will now glance at what, for want of a better term, we may call their religion. In the first place they have a sort of belief in the existence of a supreme being whose name is Abasi. We infer that they have some dim idea of his greatness from the fact that they have an adjective meaning great or grand—that adjective is *Ibum*, and is applied, in so far as we know, to two objects *only*—the one is the ocean, which they call Inyang Ibum, and the other is God, Abasi Ibum. We interpret the word in both cases to mean great and incomprehensible; they have an idea that he is in some way the maker and preserver of all things, but they have no correct apprehension as to his character and operations in the universe. They seem to think that he is too high to take notice of *all* the little affairs of men; hence they assign a separate divinity to each district in the country. For instance, *Calabar proper* is under the guardianship of a god called *Ndem Efik*; *Old Town* has *Ansa*; *Henshaw Town* has *Nsumko Munko*; *Ekremenbo* has an *Antika*; *Tono Shots* has *Ntan Ntan*; *Qua Town* has *Nim*; besides, each house has its own object of superstitious regards.

On entering into the yards, you will see a mound in the middle of them with skulls of men and dishes—that is called *Isu Abasi*, where the women may be seen offering their oblations. In a corner of the yard you may observe a multitude of bones

of all kinds, fish, birds, fowls, &c., where the men frequently offer sacrifice of the blood of goats and fowls. This is called *Isu Ekpo*. *Ekpo* means the state of the dead when they worship and sacrifice to the spirits of their progenitors. There may be observed also in the yards a stick or a pole surmounted by a human skull, which is styled *Ekpenyong*, and, besides, sundry images may be seen in different places; these are called *Ibök*, or doctor, to which application is made for the preservation or restoration of health. Other objects of superstitious regards may be seen in their farms and on the roads, such as eggs, plantains, bananas, yams, &c.; these are placed as charms for the protection of their crops, and of the wayfarers. Their ideas in regard to a future state are very vague; they appear to imagine that the condition of the departed spirit is pretty much of a counterpart to what it has been; they have an idea that the spirits of the departed return and visit the scenes that they formerly occupied; and that they have the power of inflicting harm on the person or property of relations and friends who may have failed to have shown sufficient respect to them after their death—that is to say, those who have not put sufficient property into their graves, or sent a sufficient number of wives and slaves after them to wait upon them in the other world, or who have not made for them what is called a “grand devil-making.” The manner of sending wives and slaves after them is by killing them and burying them. *Devil-making* means funeral ceremonies, which is nothing more nor less than devoting a very considerable amount of property to revelry and dissipation. I have seen as much as £100 worth of goods thrown into the grave of one chief by the side of the coffin, nearly reaching the surface of the ground. The graves are made almost invariably inside their dwellings, especially the freemen and men of wealth. One lamentable thing in connection with the death of a chief is the virtual imprisonment of his widows until the termination of the funeral obsequies, which imprisonment may last for several years. The prisoners are strictly forbidden all intercourse with the outer world, and not allowed to wash their bodies or change their scanty raiment, and numbers who have no friends outside to supply them with the necessaries of life, die during the period of such unnatural incarceration. I may mention here that human sacrifices have been abolished, and that through the influence of the Bible and the missionary of the United Presbyterian Church, a number of their superstitious customs have fallen into disuse.

I have thus far given you a description of the politics and religion of the Calabar tribe. I will now proceed to

lay before you a few statements with regard to its commerce. Since the abolition of the slave trade, before that time Calabar was one of the most noted rivers for trafficking in human beings, as Clarkson's History of the abolition of the slave trade abundantly shows; but now *palm oil* is the chief article of export, which is principally procured from the neighbouring tribes, Ibibio specially. The Calabar people do not manufacture much themselves, but they act as merchants between the producers and the Europeans. There is also *ebony*, *ivory*, and *barwood* among the articles of export, but not to a large extent, and of late *palm kernels*, which formerly were thrown aside as useless, have been exported in considerable quantities. The country behind, which has not yet been explored to any extent, is doubtless possessed of many articles which would add to the list of exports, if procurable, such as *india-rubber* and *shea butter*, and it is the conviction of the writer that gold also is to be found in the mountainous districts; but exploration is difficult on account of the reluctance of the Calabar tribe to permit Europeans to enter the country, so that its wealth remains unknown. This vast region of unexplored territory all round presents a fine field of operations for the traveller, the geographer, the geologist, the philologist, the philanthropist, the merchant, and the Christian, making Calabar the basis of operations.

MR. BRABROOK remarked that the use of the supposed supernatural power of Obo to enforce a civil claim had a curious parallel in the proceedings of our own ecclesiastical courts, who took upon themselves, by a *suit de lesione fidei*, to excommunicate anybody who failed to perform a solemn promise for the payment of money or otherwise; and in those days excommunication, especially when backed by the writ *de excommunicato capiendo*, was no unreal terror.

The PRESIDENT and Mr. HALIBURTON made some remarks, and the meeting separated.

APRIL 25TH, 1876.

Colonel A. LANE FOX, *President, in the Chair.*

The minutes of the previous meeting were read and confirmed.

Dr. COMRIE made some further remarks on his exhibition of objects from New Guinea, which had remained on view in the rooms of the Institute since the previous meeting.

The following presents were announced, and the thanks of the meeting were voted for the same, viz. :—

FOR THE LIBRARY.

- From the SOCIETY.—Bulletin de la Société Imperiale des Naturalistes de Moscow. No. 3, 1875.
- From the EDITOR.—Archiv für Anthropologie, Feb. 1876.
- From the SOCIETY.—Journal of the Royal Geographical Society for 1844, 1847, and 1848. Proceedings, ditto. Vol. I. Nos. 1, 5, 6, 7, 8, 9, 11. Vols. II. and III.
- From the ACADEMY.—Verslagen en Mededeelingen der Koninklijke Academie von Wetenschappen. Dl. IX. Jaarboek, ditto, 1874; Processen-Verbaal, ditto, 1874-5.
- From the ASSOCIATION.—Transactions of the Social Science Association, 1875, Brighton.
- From the SOCIETY.—Proceedings of the Asiatic Society of Bengal, No. 10, December, 1875; Journal, ditto, Part 1, No. 4.
- From the EDITOR.—Revue Scientifique. Nos. 42 and 43, 1876.
- From the EDITOR.—Nature, to date.

The following paper was read by the author :—

THE ORIGIN OF NUMERALS; or the OBJECT-ORIGIN of PRE-HISTORIC THOUGHTS and IDEAS illustrated by the HISTORY of the INVENTION of the ART of CALCULATION and some other USEFUL ARTS. By A. TYLOR, F.G.S.*

No writer has, I think, yet referred to the evidence that the sources of early thoughts and inventions have been principally derived from objects, and that some of the most valuable new thoughts have also an object-origin. The struggle for existence impelled early men to invent, as it does the present generation. The accepted theory of association of ideas presupposes junctions of different lines of thought, that is, ideas already originated being carried over from one track of thought to another. My object is now rather to treat of fundamental ideas and their derivatives. The early thoughts, such as we shall principally consider, are of a trunk or basal character, and we shall find they have a very definite course rising in the earliest times and continued on with successive modifications up to the present time. Observations of new objects and their consideration and results of combinations or deductions under definite laws are the only material means or source of inducing new ideas and of promoting new thoughts and inventions now as it has always been.

The inventors of all ages proceed from the known to the unknown by analogy, deductions, and analysis. All nations appear to have commenced counting with gesture-signs on the

* A portion of this paper having been communicated to the London Institution, and printed in a supplement to their Journal, it is now printed in a somewhat abridged form.

fingers to express successive numbers, then to have coined words from the hand, fingers, toes, &c., for the numerals. The digits are a series increased by a constant difference. That is, the differences between the successive digital numbers are all alike in every human language. This principle is the foundation of Babbage's difference-engine; that is, eight is as much greater than seven as seven is than six, and so on. No nation ever proposed unequal differences between the numerals. They are always increased by unity. Nations used letters or arbitrary signs instead of words previous to the invention of the Indian signs which we call figures, and which contain the cypher, or ought, a device or invention unknown to the ancients. The decimal notation derived from the number of fingers has been re-invented very often. That fact proves the universality of the direction of thought, and that it has been always influenced (in this important subject) by natural objects, and was not developed from preconceived ideas. (Perhaps the term preconceived idea is a bad one, because every idea must have a definite origin.)

An object-origin is always the most probable source, and therefore, in accordance with the Arabic meaning of the word cypher, which is vacuity, we must search for some material object used in calculation to which the term might refer. The cypher is first described in Latin in 1202 as a recent Asiatic invention in a MSS. work entitled "*De Abaco*," published to diffuse the new system of arithmetic. The title of this work gives a clue to the original object-meaning of the cypher. Unfortunately the term cypher is now applied to the whole of the numerals. The Abacus was an apparatus well known to the ancients, in one form for counting money, in another for decimal calculations. In a third form it was a table covered with sand; figures were drawn on the sand with a needle. We use the word calculate from the Latin term for the names of the balls or calculi in the Abacus. The invention was really two-fold, and in both respects a great advance was made on any previous system of arithmetic, as was distinctly declared in 1202, that it regulated position now as well as contained the cypher. The ancient Romans in reading the results of the Abacus, when a division was empty, used no sign or figure, but only set down the figures for the divisions containing some calculi. Now, I suggest—

1st. The personally unknown authors of this great discovery first gave the name of cypher to the division when it contained no ball. I believe (and state for the first time) the cypher was really only a reference to the fact that 0, a sign standing for emptiness in the division of the Abacus, should record in the

calculation that a division of the Abacus was empty. This involved no theoretical or metaphysical connection of the cypher with any theory of calculation at first. It was a true rendering of facts. The cypher was an idea of object-origin, which was evolved into the metaphysical idea of nothing.

2nd. The Indian arithmeticians settled that the sign or signs for any number under 10 should be only one figure; for any number between 10^1 and 10^2 , there should be always two figures; between 10^3 and 10^4 , there should be three figures; and so on for each new power of 10. Then a system was arranged substituting ruled lines on paper for the divisions or partitions of the Abacus (probably by the same great inventors of the use of the cypher) by which all the advantages of the use of the Abacus were obtained with only pencil and paper.

The expression "carrier," applied to spur-wheels in mechanics, is curiously parallel with the term carrying a figure in arithmetic, which probably is a survival of the act of carrying the ball from one division to the other in the Abacus. The word token in English was originally applied to figures, as if they stood for some objects. The method used in making arithmetical inventions and the plan of counting with balls should be followed in teaching the art of arithmetic to children, that is, by using objects illustrating the processes, instead of by thrusting the mature abstract arithmetic fit for scholars into the unprepared minds of children. There are modifications of the Chinese swan pan used universally for commerce in Russia, and often in England for teaching. The calculating machine really works sums by objects, just as the savage did by his gesture-language.

In another great and early invention, viz. that of flint implements, the first tools made by man, who has been since described as the tool-making animal, to distinguish him from the lower animals, an object-origin can be traced. I find a possible natural source of the first idea of a cutting and digging tool in the bills of birds. The bill of some birds is as fine as the bone needles of early men. Living on streams, the prehistoric men probably watched birds very closely, because birds were an important article of food. When unaccustomed to man's attacks, birds are easily caught and taken for food. There is no other natural object of the shape of a flint implement or bird's bill. The teeth, horns, and tusks of animals used for purposes of offence are all rounded, not ridged like an implement. The bill of the snipe and some other birds has the form and size of a bone needle.

The ridge so familiar to the flint implements of all countries is clearly represented in the cutting and digging or seizing

apparatus of the bird, and this crest or ridge still survives in the sword, bayonet, ploughshare, and even in the ornamental spear railing copied from the real weapon, and introduced into England in 1816. The invention of flint implements was long before the discovery of metals and the subsequent invention of woven articles of clothing.

Then the earliest bark clothing fabrics of the lake dwellers are clearly associated with or copied from the work of birds in nest-making, if likeness is a test. The weaver-bird enters from below to avoid snakes. Bast, or bark, was a favourite material of clothing with early men. Grass or reed mats and thatch are close imitations of birds' work, and are still articles of furniture. The spindle whorls are much later than the flint implements; they are not found among the remains of the cave men. Observation also shows that the plaited bark period preceded the proper spindle-woven fabric period. The providing a hard cavity for the foot of the spindle to turn in, although the author is unknown, was a most important invention. These whorls are made of bone, wood, slate, pottery, &c., clearly the product of an apparatus made on the plan or copied from the fine drill. That valuable prehistoric drill no doubt preceded the use of the spindle drill used for making whorls perhaps by as great a period as the latter preceded the machine drill of this century so much used in the art at present, and without which modern machinery could not be produced. The stages of this invention were best shown by E. B. Tylor.

It has been erroneously remarked that the fact of ideas being derived from objects shows that the idea arose when man was in a very uncivilised state. Nothing, I believe, is more untrue. I find that the great discovery of Babbage (the calculating machine which performed what at first was considered an impossibility) has actually the same operations as the Abacus. The plane in the planing machine was in a similar manner the substitute for the hand-plane or tool used in the human hand. In the same way the objects or lines in the spectrum discovered in the sixteenth century are the base of the new ideas of the constitution of the sun. These lines were long since measured and ascertained by the use of the spectroscope. The loadstone was long since discovered, or, rather, observed, by some unknown person to have the power of attracting iron, and thus the results—magnetism and electricity—are sciences having entirely an object-origin. The properties of steam were deduced by Watt from experiments on Newcomen's and his own engine, not from any experiment on the elasticity of vapour.

The Romans knew the electrical properties of amber, and they knew the action of the electric eel; but the ancients had

never practically realised how motion of heavy bodies could be communicated without touching an object, by a real physical cause, and for want of tangible cases of motion they never connected the revolutions of the heavenly bodies with a physical cause. Gilbert's work was quoted by Bacon, Kepler, and Newton. Gilbert gave the clue to the theory of universal object attraction, or of definite force or attraction, or "drawing to," the words suggested by the magnetic stone with its load or loadstone. Thus the great discovery of gravity had, to some extent, an object-origin, particularly if we admit that the observation of magnetic force led to the discovery of the all-pervading force of gravity. Then, as to other similar cases, the scale of Nilometer, with the height in the time of Ptolemy shows how early object-scales were introduced as measures. Figures of men and women, gods and goddesses, in Egypt or Greece, were drawn out on a scale of squares. Vitruvius gives the dimensions of every part of the body in terms of the other parts for their scales.

Then we find the following standards for measure, viz. the finger, the nail, the palm, the hand, the cubit, the foot, the step, the pace, the distance walked in an hour, the distance of two fixed points in the original stadium or building, from which other stadia were derived. Even in Domesday Book the quantity of the land is compared, not by its actual size, but by the objects it produces.

These are all proofs of the words relating to measures having an object-origin. There are similar proofs as to the measures of capacity and of the division of time being derived from measured objects, and not from any ideal source. The period of the earth revolving round the sun fixed the year, that of the earth on its own axis the day. The time or revolution of the moon round the earth fixed the length of the moon or month.

That there were twelve months in a year was also found by observation. The half and quarter month, the fortnight and week, were derived by division from the month itself, as is seen by the hieroglyphics. The period of seven days was a natural division or quarter of a month, and not formed by Sabbatarians, as we find it in Egyptian antiquities. I have the hieroglyph of Ptolemy here for the division of time. The second is represented by an eye winking, the year by the three periods of youth.

The old successive divisions of seven days were by the Akadians or Chaldeans, after the seven principal planets. These are all cases where the ideas have a distinct object-origin. I have remarked that Egyptians commenced each year with the day of the astronomical year the star Sirius rose with the sun, and in our own country similar ideas were worked out in a

different manner. The builders of Stonehenge fixed a gnomon or pointer-stone of the rude form of the trunk of a man in such a position that the sun rose exactly over it on the longest day of the year, and the orb formed the head of the man for a minute or two.

If we had not the Egyptian remains we should know little about the gradual evolution of our present arts and manufactures, and if we had not the cave- and drift-remains we should know little about the beginning of civilisation. Neither drawings nor buildings were probably made for luxury or amusement by early men. Their work had generally a religious or utilitarian object. There are no remains of palaces in religious Egypt, for the wealth acquired by trade was chiefly spent on the temple, not on palaces, or even dwelling-houses or places of amusement. There are birds which make collections of shells and urns for amusement. The savage drew on bone or ivory the animals he hunted, but never copied his own race or his own habitation. The Egyptian Ptolemaic hieroglyphics of the divisions of time give the sign for the minute or second an eye-wink.

Good clocks must have been early in existence in Chaldaea, perhaps in form like the excellent water-clock of the Greeks, so exact were the observations, even to minutes and seconds. Probably the first astronomical clockmaker living among the Akadians divided the day into twelve hours, from the analogy of the twelve months in the year, and the hour into sixty minutes, making an arbitrary division, or by the analogy of the period of the number of days in two months. These plans have been followed ever since, although any other system would have done as well, and this division into hours, minutes, and seconds is universal. Once started, a scale, bad or good, is very likely to continue—a law to which we owe many inconvenient divisions of measures and weights.

The width of the particular rails on which the first locomotive was run or tried by Stephenson was 4 feet 8 inches. This curious, odd figure determined the width of all the rails on the Manchester and Liverpool Railway, and afterwards in all England and in some other countries. There is no exception in any country now to the division of the Equator into 360 degrees. There are few rules without any exception. I have found one even to the almost universal rule that *u* follows *q*, that is, it is omitted in the word *cinq*. It seems to show that the human mind, once started upon a track, useless or useful, will continue on it. Why should not *q* have the sound of *qu*, and save the useless printing and writing of this letter *u* over a large part of the world?

The useless tracks followed for thousands of years are illustrated by the cycle of fifty-two periods, consisting of four suits of thirteen each. The four suits were originally marked by the names of four planets—Reed, Rabbit, Flint, and House—in Mexico, and this plan probably proceeded out of the number of the weeks in a year, being fifty-two, and that again gave rise to the figures on cards, which were probably first invented for astrological purposes (see E. B. Tylor).

The Etruscan alphabet, so long a puzzle, has been deciphered by Isaac Taylor by the general law of the change of digital into decadal numbers common to so many languages (see Hervas, Peacock, Pott, &c.). Terms of a standard continue, although the meaning has entirely varied.

The grain was a measure of the smallest length, now it is transferred to one of the smallest weight. Standards of weight, as we see by the case of Nineveh, were not multiples of each other. That rule was a late discovery. The recent object-origin of the metre settled by act of a legislature, takes a fixed part of the diameter of the earth, is an interesting return to an object-measure, just when another Parliament had fixed a special standard by comparison of old standards.

The keel meant originally a small lighter, now it is a weight of 21 tons. A ship load is certainly not a very definite quantity. In both Mexico and Morocco, grants were lately given for ships to come in duty free, without ever specifying the size of the ship. Of course the largest ship possible was sent in. There has been a gradual progress to more exactness in measurement, and all gauges for mechanical production, but there is still room for improvement. The divisions of screw threads, prepared by Clement for Babbage, when constructing the calculating machine, were furnished by Clement to Whitworth, and are known as Whitworth threads all over the world. The world has not yet agreed how to measure a ship. A commission on this subject was lately held.

Many other useful inventions had an object-origin: thus I presume the tree falling in the forest accidentally on another trunk, making a natural balance, no doubt gave the first idea of the balance so common in Egyptian drawings. This instrument, we know, was one of the first and most important mechanical inventions. It gave a mechanical interpretation of justice, and was often drawn in Egypt, the position of the scales being always the test of a good life.

The balance is the foundation of modern chemistry, for by it are determined the dimensions and relations of weight and measure, and of the composition of bodies.

The Greeks made two crowns of equal weight, but of different

metals, and immersed them in water, thus establishing the law of specific gravity. This important discovery had a well-known history, but its object-origin could have been safely inferred.

Again, the wind would be observed to blow flame very unevenly by the earliest discoverers of fire. The effect of wind thus acting on fire no doubt suggested the early use of an artificial blast through a reed, or a goat-skin bellows, to get a more intense flame. The invention of the blow-pipe bellows led to the invention of the art of metallurgy, and preceded that of commerce, which it powerfully influenced. The metals at the earliest period, as now, regulated exchanges.

The reed was the first blow-pipe used, and charcoal and lime were also the first smelting materials used in the first metallurgical operations, and continued still to turn ore into metal—so we have another instance of the great ability and perseverance of the inventions of those whom we call savages. The date of this invention must have preceded the earliest Egyptian temple certainly many thousand years. As the present or modern iron blast-furnace has also a gigantic blow-pipe, and coal often replaces charcoal, therefore modern metallurgy is as much a continuation of the old plans of prehistoric men as the modern calculating machine is a continuation of the ancient Abacus. Identical plans of manufacture of weapons, and of metallurgy, are now used throughout the world, just as the shapes of flint implements were universal in former ages. The manner in which an useful invention spreads was nearly as complete in prehistoric times as at present.

The dream of an universal language has been realised as far as numerals and arithmetical figures are concerned, without any international agreements. All the world uses the Indo-Arabic figures, cyphers, and Napier's Logarithms; only the Roman letters are now employed for inscriptions, or to mark the number of plates in books. When the Abacus was used, the Roman capitals answered the purpose well enough, because it was only necessary to record results in the Roman figures, but not so in paper calculations where addition was necessary. The fact that the forms of numerals have lasted unchanged nearly 3,000 years shows an inherent vitality of form. It appears as if the Roman digital numerals are all straight lines, because the Romans counted by means of pegs placed in the ground. I infer this because up to X, Roman numerals appear to be drawings, or copies of wood tallies or pegs. We have a survival of these original wood-billets in the Exchequer tallies till lately used in this country, and also probably in the wickets in use in the game of cricket. The C and M for hundred and thousand

are comparatively modern additions. The C was the band or with in Egypt. The Asiatic characters were, on the contrary, all curved, and had forms fit to be drawn in sand, not represented on wood. Sand was the material, we know, used by the early Geometers to explain their problems in the Abacus, and which was used for many other purposes unknown to us or Egypt. Thus the tombs of the Bulls in Egypt were filled with sand before the sarcophagi were lowered down into them by taking out the sand by handfulls (Robert Stephenson).

I believe savage men may have divided their booty and possessions very accurately by object-divisions, before they had any names for numerals. Equality and quantitative differences are observable without apparatus. In the same way the Greeks knew the principal proportions of geometrical forms by actual measurement long before they invented the art of reasoning on paper about straight lines, curves, squares, and circles. We may be sure that any great propositions, like the measuring the height of a building by its shadow, was first known experimentally by measurement of an actual shadow in the Abacus, which instrument may have been often of large dimensions, fixed in the centre of the theatre of the schools. The black board is its lineal descendant, but the vertical position has displaced the horizontal, and the modern chalk the ancient needle and sand. We may infer that the first geometrical demonstrations were by actual measurement of areas, lines, and angles. One instance of this survives in the demonstration of the fourth problem of the first book of Euclid, where application of one triangle to another is the test of equality.

The result of the 47th proposition of the first book of Euclid was probably well known by actual measurement of the squares on the triangle in the Abacus. In the drawing of a man using his Abacus in mediæval times, he is represented with the compass in his hand measuring. Nothing could be easier than the actual proof by measurement of this proposition, when once the idea of equality was suggested. The reason the Greek Geometers applauded the demonstration of the 47th proposition so much, I take it, was not for the utility of the discovery of the equality of two squares to one, which was probably well known before, but for the intellectual beauty of the geometrical or mathematical demonstration, the truth of which could be checked and found to be true by actual measurement. Not only had this great geometrical problem, the 47th of the first book of Euclid, an object-origin, but the works of great writers of all ages are filled with description and similes of natural objects. We have especially our school of Lake Poets devoted to the art of making poetry and nature coincide.

All the great discoveries of modern science are founded on object-teaching or experiment, so that the greatest ideas in science, art, and philosophy have an object-origin. Thus Franklin compared the optical qualities observed of electrical sparks and lightning, and on trial found they acted alike in the Leyden jar. The great Newton never trusted to reasoning that he could not support by diagrams or by an experiment. We may therefore consider, from the numerous examples I have given, that thoughts based upon realities, or in fact that the thoughts which I think may properly be termed basal or trunk thoughts, have an object-origin and yet are of the highest value, and that the quality of the mental work of early man is as good as our own. As science advances, ideas of object-origin or object-proof, will be more and more valued, to the exclusion of the more fanciful analytical ideas which do not depend on observation, and now, as in the middle ages, set men on false philosophies. The truth is only appreciated when it is shown to be the truth by an independent proof. Arithmetic and geometry have therefore the highest place, because they prove each other. In Florence, of the seven sciences depicted, arithmetic held the first place on the Gheberter column.

I trust I have established the probability of some of the earliest ideas and inventions having a strictly object-origin. Some of these have survived to the present day, and have been of the greatest utility to man, and helped his civilisation. They have been re-named, and appeared again in combination as secondary thoughts. Many of the greatest masters of modern thought have used similes of object-origin for their most important passages. The same views applied to the development of thought might be applied to the theory and the development of species. No individual or species can change without some definite object-cause, near or remote, transmitted or duly received from some physical object. An old writer said, forms of beauty lie hid in marble; it required the sculptor to render them visible. Thoughts of beauty or utility, we may say, lie hid in nature; it requires the human mind to render them perceptible. The thoughts of animals may, like ours, frequently have an object-origin, but animals seem to have a difficulty to produce new ideas.

DISCUSSION.

The PRESIDENT said he did not clearly understand from the paper how the 0 came to represent the empty calculating machine, unless it had already been recognised as the figure indicating zero, or unless the calculating machine was itself of a circular form. Otherwise a square or triangle, or any other geometrical figure might equally be taken to represent emptiness. He thought there

were many suggestive points in the paper, but he could not quite concur in thinking that the forms of flint implements were likely to have been copied from the beaks of birds, although, doubtless, such natural objects may have been utilised by the earliest men, as we know they are by existing savages, for any purposes for which they are found suitable. Taking a broad view of the subject, he thought that the imitation or utilisation of natural forms by man bore exactly the same relationship to the arts that onomatopœia did to language. Philologists had shown that language did not certainly originate exclusively in the imitation of natural sounds, although onomatopœia had served to enrich it from time to time in the process of its development; so also the origin of the arts was not based solely on imitation, but grew up gradually through necessity, and natural forms were utilised or imitated from time to time as their uses came to be understood. The faculty of imitation was, no doubt one of the most marked characteristics of primeval man, but it was not his only faculty, nor could it in itself suffice for the progress that has taken place.

Mr. LEWIS said that it was not merely at Stonehenge but at most of the British circles that a reference, by outlying stones or otherwise, was made to the north-east. He had given many details concerning this matter in various papers read by him in that room and elsewhere, and could, therefore, only say on that occasion that he connected it with solar worship. Mr. Tylor's paper was, as he understood, written to show that numerals and measures were derived simply from material objects, but he could not see what else they could be derived from; it was impossible to evolve either a metre or a two-foot rule from the moral consciousness, and the fact stated by Mr. Tylor, that modern nations had sought for a material standard, showed this to be the case. In all ages the object had been to select as the standard of weight and measure some object or objects which should be as nearly as possible everlasting, invariable, and readily accessible. Amongst such objects the average grain of barley had been selected by some nations, and figured in our own tables.

Mr. DISTANT said: There is considerable danger in ascribing man's early inventions to the observation of natural objects, as has been done in this interesting paper, by supposing that flints of human workmanship were formed on an idea received from the beaks of birds. On this principle nothing would be easier than from the annals of zoology to obtain facts that would account for the birth of almost all those discoveries by which man gradually acquired the advantage in the struggle for existence. Allusion has been made to the wind blowing through a reed having perhaps been the cause of the use of the blow-pipe. But facts could be thus brought to bear on the same phenomena having originated the manufacture of musical instruments; for Dr. Schweinfurth tells us that when travelling in the heart of Africa he found in the acacia groves that the shoots were often distorted in form and swollen at the base with globular bladders, through the agency of

the larvæ of insects which had worked their way inside them. When the insect has escaped, the shoot acts the part of a musical instrument, the wind producing from it the sound of a flute. Pushing the principle still further we might imagine our ideas of government to have come from observing the social economy of ants and bees, or that the "Physalia" gave to man the art of construction of the canoe.

Mr. BRABROOK remarked that in the somewhat advanced stage of civilisation to which the invention of numerals belonged, he believed far more importance must be attached to considerations of utility than to the imitation of natural objects. No doubt for every operation that involves mere counting, the fingers of the hands present themselves as the most obvious instruments for the purpose, hence the almost universal adoption of a decimal system of numeration; but when division or weighing is required, then a duodecimal system becomes necessary, and is everywhere adopted. This led him to remark, incidentally, the extreme fallacy of the advocates of a decimal coinage and of the decimal system in weights and measures, who would endeavour to apply to matters in which every variety of division and subdivision has to be provided for a system that is incompetent to express the idea of division by three, otherwise than by an endless series of divisions into three-tenths plus three-tenths of tenths plus three-tenths of tenths of tenths, and so on *ad infinitum*.

Mr. Moggridge, Mr. Smee, and others, took part in the discussion, and Mr. Tylor replied.

The following paper was read by the author:—

SOME APPARENT COINCIDENCES of CUSTOM and BELIEF among the ANCIENT CHALDEANS and the PEOPLES of WESTERN EUROPE. By A. L. LEWIS, M.A.I.

PERHAPS there is no professedly Anthropological society which is doing more real anthropological work than the Society of Biblical Archaeology. Whatever and wherever the origin of the human race may have been, it is to Chaldea and to Egypt that the origin of the civilisation of Western Europe must, for the present, at least, be traced, and it is to the records of those countries, so wonderfully concealed during ages of indifference, if not of barbarism, so wonderfully brought to light within the last few years, and so wonderfully translated for us by those scholars (amongst others) who take the leading part in the Society of Biblical Archaeology, that the anthropologist must look for the elucidation of old problems, and it may be for the bases of new ones. There are but few who can translate a cuneiform inscription reliably and satisfactorily, but, when the inscriptions are translated, it becomes alike the privilege and the duty of students of other branches of science to study the

translations, and to assimilate such parts of them as bear upon the facts which they have already collected from other sources. It is in this manner, therefore, and not because of any original discoveries or even researches of my own, that I venture to bring before you the following notes and queries.

Some of the clay tablets which took the place of our paper and parchment deeds, and which stated the terms upon which land was sold, and the interest and conditions upon which loans were granted, bear the marks of finger-nails in place of seals. Is it possible that the custom which prevails amongst us at the present day of touching the seal of a deed with the finger on signing it is in any way a survival of the Assyrian custom of marking the moist clay tablet with the finger-nails of the contracting parties before baking it?

The Assyrian months were lunar months, and the days on which the quarters began were to a certain extent treated as sabbaths. The half-month was divided into three periods of five days each, called respectively after Anu, the god of heaven, Héa, the god of the sea, and Bel, the god of the earth, probably on account of the moon being at those times in the particular part of the heavens dedicated to the god named. This division of the heavens between the gods may be compared with the arrangement of the altars of the state religion at Pekin, where it is stated that an altar of heaven is situated on the south side of the city, an altar of the earth on the north side, an altar of the sun on the east side, and an altar of the moon on the west side; and this again brings to mind a monument on which Nechtharhebes, a king of Egypt of the 30th dynasty, is represented as offering a libation to the deities of the four cardinal points or quarters of his country, the names of those deities and the cities in which they were venerated being inscribed on the monument in hieroglyphics.

The Babylonian measures of length, and also the Jewish, seem to have been based upon the barleycorn. It is well known to most school children that three barleycorns make one English inch. Mr. Conder considers our measures to be compounded from the Babylonian and Roman.

The Babylonians had in their temples towers, on the summit of which were altars. Is it possible that the Irish round towers, the object of which has been so much disputed, were analogous to these?

Sun-worship and the burning of children were common to Babylonia, Palestine, and Phœnicia, and were borrowed from the Accadians, as were most other beliefs, practices, arts, and sciences of the period. Sun-worship and the passing of children through or over a fire were also in vogue among the Celts of

our own country, the latter custom in particular having survived to a very recent date, if not even to the present day.

A number of writers have shown us that the true origin of many so-called Christian emblems, vestments, rites, practices, and even doctrines, for which no foundation can be found in the New Testament, may be traced to the various systems of paganism, and particularly to that of Assyria, and it would not be surprising if among these were found some things that have gathered round the simple memorial of bread and wine instituted in the upper chamber at Jerusalem. The Assyrians had a mysterious object called in the Semitic tablets "mamit," and in the Accadian "nambaru" and "sakba," the exact nature of which is at present unknown, although some of its characteristics may be gathered from various allusions to it in the inscriptions. Thus the following lines show that the "mamit" was regarded as having a heavenly origin, if not as being itself a deity:—

"Salvation, from the midst of the heavenly abyss descended,
Mamitu, from the midst of heaven descended."

And again,

"Mamit, Mamit, treasure which passeth not away,
Treasure of the Gods which departeth not,
Treasure of heaven and earth which shall not be removed,
The one god who never fails,
God and man are unable to explain it."

While another hymn is devoted to impressing upon the worshippers the duty of saving the "mamit" before all other things in case of a temple taking fire.

From the following lines we gather that the "mamit" was a small object, and was taken to the dying with the view of purging them from their sins:—"Take a white cloth, in it place the mamit in the sick man's right hand, and take a black cloth, wrap it round his left hand, then all the evil spirits (naming them), and the sins which he has committed, shall quit their hold of him, and shall never return."

Again, we hear that Cara-Indas, King of Cardunias and Assur-bil-nisi-su, King of Assyria, made a covenant and a "mamitu," which is translated pledge, thus reminding us of the derivation of our own word sacrament, from *sacramentum*, an oath, and of the frequency with which the sacrament was used to swear by in the middle ages.

The Assyrians believed in the immortality of the soul. The souls of the righteous rose, as they imagined, like a bird to the skies, and the sun, "greatest of the gods," received them into happiness. The following line—"May the sun, greatest of the Gods, receive the saved soul into his holy hands"—sounds very

like an utterance from an orthodox Protestant pulpit of the present day. The great name of the sun in Assyrian theology was "Dian-nisi," which means "the judge of men," and is identified by Mr. Talbot with the Dionysus of the Greeks.

While, however, the souls of the righteous ascended to the sun, the souls of the unrighteous descended, according to the Assyrians, to "Bit Edie," "the house of eternity;" "Bit sha eribu's," "the house of darkness;" from which terms, "edie" and "erib," Mr. Talbot derives the Greek "hades," and "erebus." "Erib" strictly means to enter, but gets a secondary meaning of darkness from the sun entering or setting in the western sea. This derivation reminds us of the statement of the Rev. E. Davies, in his "Celtic Researches," that "Annwn," the country of the dead was, according to the Kymry, situated in a lower region, in the going down of the sun in the west, and that Hercules and others are said to have gone to the west to consult the manes of the dead; while the Celtic word "Annwn," reminds us again of the "Annunaki" of the Assyrians, the offspring of Anu, the sky, or the God of heaven; these "Annunaki" had their seat in the lower world, and may be compared with the "Cwm Annwn," or children of Annwn, a kind of spirit believed in by the old Kymry of Britain.

Amongst the gods named in the Assyrian tablets, is one called Héa, of whom Mr. Talbot says his name might, perhaps, better be translated, Hu or Ho; he was the god of the sea, and of all clever inventions and mysteries, and it has occurred to me that he may be substantially the same as the Hu Gadarn, or Hugh the Mighty, of the Kymry, who, according to their triads, led them from the shores of the Euxine to Britain; it may be that, as they followed the sea-coast for the most part, they considered Héa, as god of the sea, their leader. Mr. Croggan, who by the aid of the Celtic languages has produced the first satisfactory translation of the Lycian inscriptions, identifies the Lycian deity, "the great Hu," "the high ruler of the heavens," with the aforesaid Hu Gadarn, and thus supports my view.

At first sight it may seem rather a long step from the Assyrians to the Kymry, but the line of connection is not so difficult to trace as might be supposed, even if we ignore the possible connection, supported by Mr. Croggan, between the Lycians, the Trojans, and the Kymry. Mr. Smith, in his "Chaldean Account of the Deluge," says, "the oldest traditions of the early Babylonians seem to centre round the Persian Gulf," and, says Mr. Sayce, "it seems more and more clear that the original home of the Semites lay in the Arabian Desert, stretching from the Persian Gulf to the Red Sea," but this is precisely the quarter from which, according to Herodotus and other writers,

the Phœnicians originally came; moreover, the difference between the Assyrian, Phœnician, and Hebrew languages, seems to have been, if anything, less than that between German, Dutch, and English, while a multiplicity of ties of custom and religion connected those peoples together,* and there seems every reason to believe that the Phœnicians, and through them the Europeans, derived more from Chaldea, and it may be less from Egypt, than is generally supposed. From the Phœnicians to the Kymry is not a very wide leap; that the Phœnicians or Carthaginians had, at a very early date, commercial relations with, and considerable influence upon, the inhabitants of these islands can hardly be doubted; and, whether by their means or otherwise, it is certain that many identical superstitions, beliefs, and practices, have spread along a line extending from these islands to the Mediterranean, Southern Asia, and Hindostan.

Perhaps, however, one of the most remarkable facts that have been discovered in connection with ancient Babylonia and Assyria, is the fact that nearly all their civilisation originated with a Turanian race, and was only borrowed and diffused abroad by the less cultivated Semites, who overran their territory, intermingled with them, and succeeded them in empire, just as the civilisation of the barbarous Teutons of Europe has been derived from the Latin and Celtic nations, whom they in some measure supplanted, but who inherited, preserved, and improved the civilisation of the East. Can it be that our science has a great surprise in store for us, and that we shall ultimately find out that all civilisation originated with the somewhat despised Turanian peoples?

DISCUSSION.

Mr. MONCURE CONWAY said that the questions suggested by the paper were of a vast character. The great problem in the region of Assyrian mythology seemed to be the right distribution of the ideas and myths found there to right ethnical sources. The races, and consequently the religions, of antiquity seemed to have been rolled together then to such an extent that we often find things that puzzle us as to whether they are Chaldean or Persian or Indian. The survival, for instance, in Europe of a belief in some evil influence of moonlight nights carries us back to Hur (the Moon), third person of the Assyrian trinity, but the association of destructiveness with it must be traced to Siva, as, indeed, must the awfulness usually ascribed to such third persons, and the fatality of sins against them.

* One of these customs, cited by Mr. Talbot, will be familiar to all. The practice of cutting the flesh, used by the prophets of Baal in their contest with Elijah, is specially commended in one of the tablets, if used in honour of Ishtar, the Ashtaroth of the Philistines.

Mr. PARK HARRISON said: Whilst fully admitting the very great progress that had been made in deciphering cuneiform writing, he was merely repeating an objection that had been more than once made by eminent Assyriologists, when he said that it was too much the practice of translators to *guess* at the meaning of words. When theological terms were used, supposed equivalents were often adopted from the religious phraseology of the day.

After some remarks from Mr. TYLOR,

Mr. LEWIS said, in reply to Mr. Park Harrison, that he did not think that he had in his paper treated any doubtful terms as being established. He was glad to find himself supported in general by Mr. Moncure Conway.

The President announced that Lieut. Cameron, C.B., R.N., would, on a future occasion, read a paper on the Anthropology of Central Africa; and the meeting separated.]

MAY 9TH, 1876.

Colonel A. LANE FOX, *President, in the Chair.*

The minutes of the previous meeting were read and confirmed.

The following presents were announced, and the thanks of the meeting were voted for the same, viz. :—

FOR THE LIBRARY.

From Prof. F. V. HAYDEN.—Bulletin of the United States Geological and Geographical Survey of Territories. Vol. II. No. 2.
From the EDITOR.—Materiaux pour l'Histoire de l'Homme. April, 1876.

From the INSTITUTION.—Journal of the Royal United Service Institution. Vol. XX. No. 85.

From the AUTHOR.—The Works and Problems of the Victoria Cave Explorations. By R. H. Tiddeman, M.A.

From the EDITOR.—Revue Scientifique. Nos. 44 & 45, 1876.

From the SOCIETY.—Proceedings of the Royal Society. Vol. XXIV. No. 168.

From the SOCIETY.—Proceedings of the Royal Society of Tasmania, 1874.

From the AUTHOR.—The Mystery of the Serpent. By Rev. Henry Stretton, M.A.

From the INSTITUTE.—The Canadian Journal. Vol. XV. No. 1.

From the ACADEMY OF SCIENCES, Krakowie.—Rozprawy Wydziału Przyrod Niezego. Tom II. Kolberg Lud, No. 9

From the EDITOR.—Nature (to date).

Mr. HYDE CLARKE read the following paper :—

On PREHISTORIC NAMES of WEAPONS. By HYDE CLARKE, M.A.I.
THE extraordinary way in which weapons are distributed among the ancient and modern races of the world caused me to suggest the desirability of an inquiry into the relations of the names, and to publish a note on the connection of a name for arrow between India and Africa. No one has yet followed up the subject, for which the materials are scarce, and have to be collected from works not readily accessible. As an encouragement to research, the following examples are now offered of some names of cutting weapons. Those selected are arrow, or dart, knife, sword, axe, or hatchet, and spear, or lance. Hoe, it is interesting to observe, is allied to axe, just as a celt is employed for both purposes. All these are allied as a group.

Root, BK.

ASIA, &c.	AFRICA.	N. & S. AMERICA.
<i>Arrow—</i>		
Gyarung kipi.	Houssa kebia.	Itenes (S.) kivo.
Khari Naga takaba.	Goali kawi.	Alaska (N.) kio.
Mru, or Toung		Cabecar (C.) ukawo.
of Burmah qwai.		Darien (C.) cheekwa.
		Bribri (C.) kabut
<i>Knife—</i>		
	Houssa takobi.	Skwali (N.) khaw.
	Fulah kafahi.	Watlala ughkhan.
	Wolof paka.	Chinook khawekhe
	Fulup gewa.	Pujuni kiai.
		Queensland kuburra.
		(Austr.)
<i>Sword—</i>		
	Houssa takobi.	
	Fulah kafahi.	
	Nufi chukwo	
	Anan akowo	
	Gobaru takobahe	
	Boko takuwo	
	Gajaga kafa.	
<i>Spear—</i>		
	Batta kubi.	S. Australia kyah.
	Filham kabai.	Crow (N.Am.) kaabe.
	Nki kebie.	

A curious point is in the parallel forms.

<i>Spear—</i>		
India kipi.	Houssa kebia.	
takaba.	takobi.	

Root, BN.

<i>Arrow—</i>		
Burmese pen.	Mandingo benyo.	Miami (N.) wepema
Malay pana.	Bambarra bien.	
Javanese pana.	Ashantee eben.	
Sanskrit banah.	Kanyop punon	

Knife—

Khond penju.
Telugu banamu.

Kiriman mbene.

Sword—

Kra pano. Polynesia (bow) panna

Spear—

Mandingo benyo.
Curma gbani.

*Root, DM.**Arrow.*

Sontali jhampa.
Thakaya tume.
Tamil ambu.

Spear.

Mandingo tambu.
Bambarra tama.

Arrow.

Keracares tomete.

Axe.

Landoma tamun.

Sword.

Houssa tamagas.
Ekamtulufu ntame,
ntome.

*Root, KN.**Arrow.*

Tharu khando.
Madi kani.

Arrow.

Fanti egandua
Tene, &c. kuni.

Arrow.

Australia kinnee.
" koön.

Chentsu kondu.

Ashantee egiane.

" gane.
Axe.

Tamil kanei.
Chinese chien
Tibet chen

Bornu kaniri.
Fulup, &c. kuneb.
Gbandi kuno, kona

" gane.
Arrow.
Cayuga (N.) kanoh.
Tuscarora (N.) kanah.
Cherokee (N.) gahnee.

[Greek kontos.]

Sword.
Ekamtulufu nekono
" ekon.

Carib (S.) kengye.

Bow.
Ashantee egan.

Axe.
Dakota (N.) ahana.
Miami (N.) lawkawka-
nah.

Spear.
Mose kande.

Knife.
Cayuga (N.) kainana.

Wun kanyake.

Axe.
Darlen (C.) akana.

*Root, KM.**Spear.*

Ashantee kami.

Arrow.

[Australia] kaama.
Carib (S.) chimari.

Axe.

" ekuma.

Axe.
Piskakoa (N.) mikhamun

Sword.
Boritsu giman.

Bow.
Bribri (C.) shkumne.

*Root, KL.**Bow.*

Mandingo kallo.

Knife.

Muntu mukalu.

Spear.

Jelana kala.

Boomerang.

[Austr. (Vic- { kallum-
toria) { kallum.

		<i>Root, SK.</i>	
Arab	<i>Knife.</i>	<i>Knife.</i>	<i>Axe.</i>
	sakin.	Houssa aska.	Blackfoot (N.) kokaakin.
		<i>Axe.</i>	<i>Knife.</i>
		Ashanti sukare	Tiribi (C.) sogro.
			<i>Shield.</i>
			Bribri (C.) sogur.
			Cabecar (C.) sogru.
		<i>Root, KS.</i>	
[Basque	<i>Arrow.</i>	<i>Axe.</i>	<i>Arrow.</i>
	guezi.	Mbarike gesum.	Brunka (C.) tunkasa.
		<i>Sword.</i>	
		Tene kese.	
		<i>Spear.</i>	
		Opanda kasa.	
		<i>Root, SN.</i>	
Naga	<i>Arrow.</i>	<i>Arrow.</i>	<i>Knife.</i>
	san.	Serar insan.	Dahcotah (N.) ccsang.
Siam	tsao.	Lubalo, &c. musongo.	
		<i>Knife.</i>	
Chinese	tsien.	Bornu dsena,	
		dsana.	
		<i>Sword.</i>	
Gadaba	sonai.	Batta songai.	
Naga	lassang.	Kisama isango.	
		<i>Knife.</i>	
Circassian	soonee.	Ham dsangara.	
		Bulunda son.	
		<i>Spear.</i>	
		Basa esanu.	
		Boko suna	
		<i>Axe.</i>	
		Pika dsonto.	
		Musentandu sengele.	
		Nyamban ntsanga.	
		<i>Root, SR.</i>	
Koko	<i>Arrow.</i>	<i>Arrow.</i>	<i>Arrow.</i>
	sar.	Bulum sor.	Tiribi (C.) suri.
		<i>Sword.</i>	<i>Knife.</i>
Georgian	sari.	Mose, &c. sore.	Shasti (N.) atsirai.
		<i>Knife.</i>	
Sanskrit	sara.	Mose sora.	
		Legba sera.	
		Bambarra sirifey.	
		<i>Spear.</i>	
		Pajade sori.	
		<i>Root, SM.</i>	
Arab	<i>Arrow.</i>	<i>Axe.</i>	<i>Axe.</i>
	sahm	Wolof seminye	Natches (N.) chyamino.
		<i>Sling.</i>	<i>Arrow.</i>
Mongolian	somon	Ashantee same.	Carib (S.) sumara.
		<i>Sword.</i>	
Brahui	sum	Ifo dsoma.	Moxos (S.) chimniye.
		<i>Axe.</i>	
		Songo odsimpu.	
		Salum dsambere.	

Root, BL.

	<i>Arrow.</i>	
Naga	pela.	
Garo	bala.	
Siam	pla.	
Nikebar	bol	
[Latin	pilum.]	
[German	pfeil.]	

	<i>Arrow.</i>	
Nki	bole.	
Kisi	belendor.	
	<i>Knife.</i>	
Kabenda	bele.	
	<i>Sword.</i>	
Houssa	yambol.	
	<i>Spear.</i>	
Coptic	gebel.	
Mampo	bal.	

	<i>Arrow.</i>	
Carib (S.)	pulewo.	

Throwing-stick.
[S. Australia nyarimtal.

Spear.
[N. S. W. bilarr.

Root, BR.

	<i>Arrow.</i>	
India	bara	
Laos	lempur.	

	<i>Arrow.</i>	
Basa	purq.	
	<i>Spear.</i>	
Landoro	mboro.	
	gbara.	
Musu	pere.	
Pulo	laboru.	
Legba	agbare.	
	<i>Axe.</i>	
Fulah	gembiri.	
Baga	abera.	
Kisikisi	berai.	
	<i>Sword.</i>	
Ebo	baruke.	
	<i>Knife.</i>	
Gbandi	mbura.	
Toma, &c.	boro, bora	

	<i>Arrow.</i>	
Carib (S.)	parau.	
	<i>Knife.</i>	
Cabecar (C.)	taberi.	
	<i>Bow.</i>	
Moxos (S.)	parami.	
Itenes (S.)	pari.	
	<i>Club.</i>	
[N. S. W.	beira.	

Root, DR.

	<i>Arrow.</i>	
Dhimial	tir.	
Gondi	tir.	

	<i>Arrow.</i>	
Ashantee	adere.	
Anfue	aturo.	
	<i>Knife.</i>	
Mandingo	terang.	
Murundo	direndi.	
	<i>Axe.</i>	
Biafada	dira.	
Yula	doro.	
	<i>Sword.</i>	
Soso	deremai.	
Landoro	daruma.	

	<i>Bow.</i>	
Natchez (N.)	teeragish.	
Pawnee (N.)	"	
	<i>Spear.</i>	
[Austral.	darah.	
	<i>Axe.</i>	
[" Vist.	tharinga.	
[" " "	thurang.	
[" Queens-	land durree.	

Root, KB.

	<i>Boomerang.</i>	
Kuli, Guzerat	keturia.	
	<i>Arrow.</i>	
Tharu	khando.	
Chentsu	kandu.	
[Greek	kontos.]	
[Latin	sagitta.]	

	<i>Sling.</i>	
Mandingo	kutokato.	
	<i>Arrow.</i>	
Filham	katan.	
Fanti	egandua.	
	<i>Sword.</i>	
Bini, &c.	agada.	

	<i>Boomerang.</i>	
[Austr. Vic-}	katum-	
toria	katum.	
	<i>Axe.</i>	
Honduras (C)	keedak	

Root, SB.

[Nepaul *Arrow.* sobi.
Sword.
 [Greek xiphos.
Shield.
 [Greek aspis.

Ashantee *Knife.* sippo.
 Coptic sebe.
 " *Sword.* zibune.
 Igu *Knife.* odsufo.
 Songo *Sword.* sibata.
 Toma *Axe.* sefa.

Knife.
 Catawba (N.) sipah.
Sword.
 Blackfoot (N.) sapapis.
 taeis.

Root, KR.

Dhimal *Arrow.* khar.

Axe.
 [Basque haizcora.

Fulah *Arrow.* kurral.
 Pulo, &c. kure.
 Houssa *Axe.* kerada.
Spear.
 Jelanas kar.
 Krebo gheradr.
 Tene geresos.
 Egba, &c. ogokure.
Sword.
 Wolof karre.
 Anfue kerante.

Knife.
 Ebo ogari.
 Biafada kerani.
 Ekamtulufu ekore.

Throwing-stick.
 [Australia korree.
Axe.
 [" korrie.
Club.
 Bribri (C.) kiru.
Arrow.
 Carib (S.) werakure.
 Moxos (S.) chere.

Root, MR.

Arrow.
 Gondi murre.
 Kolami murre.
 Burman mra.

Arrow.
 Meto muro.
 Bola omeri.
 Kandin amur.
 Legba nyimere.
Knife.
 Bambarra muri.
 Mandingo, &c. { muro,
 { mere.
Spear.
 Coptic { inereh,
 { merh.
Sword.
 Nala moreh.

Spear.
 [Australia,
 Queensland mura.

Root, MN.

Knife.
 Bayon menye.
 Okam imana.

Knife.
 Yankton (N.) meena.
 Alaska (N.) mina.
Spear.
 Omaha (N.) mandehi.
Knife.
 Brunka (C.) munkra.

Sword.
 Momenya menyi.

Root, DL.

Arrow.		Axe.		Spear.	
Naga	tel.	* Vei	tiele.	Victoria	toola.
	Dart.				
[Latin	tel-um.	Houssa	gatali.	N. S. Wales	tulu.

Further investigation will give us a mass of information, and enable us to throw more light on the comparative chronology of weapons. It becomes possible to ascertain what names are ancient by the study of their distribution. When we find allied names in Asia, Africa, Australia, and the Americas, we know this distribution must have taken place at a most remote and early epoch. Thus distribution in space becomes a measure of time, because ages are required to produce such results. There is some relationship in Africa between the tongue and darting weapons. The following words may belong to this class :—

Degen (Germ.) sword.	Tongue.
Gladius.	Glotta, Glossa.
Lancea.	Lingua.

It might have been thought that spear, dart, and arrow may have taken their names from the snake, but it appears to be from the darting of the fish in the water. This similarity is found in Africa and India. Shield and shoulder, which have a likeness in English, have a prehistoric alliance. It will be observed that the facts apply to Asia, Europe, Africa, Australia, and the Americas, and they are supported by equivalent similarity in other objects of culture, besides tools and weapons.

The following are examples of axe and stone in the same language in Africa :—

	Axe.	Stone.
Boritsu	giso	giso.
Pika	—	guso.
Mimboma	tadi	tadi.
Nyombe	tadi	ditadi.
Gajaga	yide	gide.
Bulanda	fulahu	fulagu.
Kasm	doro	kandoro.
Kiriman	bero	fero.
Aleje	deka	oka.
Mandingo, &c.	tegeran	kuru.
Kono	yende	sine.
Basa	jue	so.
Kum	jan	ten.
Tene	wori-segesi	wure-kobi.

In Gbandi axe is kuno, and stone is koni in Gbese. In the Egba districts the word for stone is ekuta; this is divided for axe into ake and edu.

The word for knife, as might be expected, follows the same law as axe, and shows conformity with stone.

	Knife,	Stone,	
Boko	fure	gbere	B
Landoro, &c	mboru		
Timbuktu	huri	hairi	T
Isoama	uma	nkuma	I
	takuma		
Mbarike	gesum	giso	Boritsu
Bagba, &c.	menyi	manyu	Kabenda
Kanyika	kel	kele	Mbamba

In the Mandingo dialects the word for stone being *kuru*, it is differenced for knife as *muro*.

What is understood as Grimm's Law does not necessarily imply vocal degeneracy, as is supposed, because the permutation of the sounds or letters was in prehistoric times used for differentiation (see Tylor, and my "Prehistoric Comparative Philology"). It is possible, and even probable, that as different meanings were differentiated, so the differential words were distributed among tribes, and have been propagated without any reference to Grimm's Law.

In Songo the word for stone is *bitamba*, and that for axe *simpu*, a differentiation, but the word for hoe is *bitamba*. The cause of this relationship between the naming of stone and of tools and weapons is not to be sought far. In our times stone has rather a relation to building, but not so with people who lived in caves and trees. The flint and obsidian chiefly attracted their attention for knives, axes, hatchets, swords, spears, arrows, hoes, and other cutting purposes. Thus the name of stone for other uses was merely secondary, while the widespread use of stone weapons affected the early stage of language.

As a comment on the use of the word stone for weapons and tools, and as a contrast, the word for boat is obtained in Africa from calabash or from tree. In Africa a boat is got up from two calabashes. The dug-out being less used, tree is a less common equivalent for boat. The Indian names, including the Sanskrit, conform to the African.

One point of interest in connection with this relationship is its bearing on the questions of a stone age, and on that age at an early epoch. The philological evidence obtained from the infancy of language is to the effect that the words relate to a period in which stone, wood, bone, and teeth, were used as tools and weapons, and in precedence of the discovery and application of metals. Another matter of archæological bearing, as Col. Lane Fox has pointed out, is that it is an indicator of facts, where we have not got material evidence. Thus, as he says, African stone weapons are rare, while the linguistic testimony is

strong as to a stone age, and, indeed, we cannot doubt that Africa must have passed through such an epoch.

Arrow is also equal to bone—

<i>India.</i>	<i>Arrow.</i>	<i>Bone.</i>
Yerukala	yikke	yamakha.
Tamil, &c.	ambu	olumbu.
Irular	ambu	zelambu.
Pakhya	kadba	had.
Khond	pinju	pasu.

Arrow = horn, which is the synonym of bone.

<i>Africa.</i>	<i>Arrow.</i>	<i>Horn.</i>
Bambarra	bien	bian.
Mandingo	binni	binni.
Ashantee	eben	eben.
Yarriba	owo	owo.
Tamil (India)	ambu	kambu.

In Telugu (India) arrow is banamu, in Sanskrit bana. Arrow = tooth, which is the synonym of bone.

Khyeng, Burmah arrow, thwi thwa, tooth, Burmese.

Axe, in some cases, is equal to thunderbolt, as has been illustrated in various works, and on which some notes are here inserted. Japanese axe (stone), *rai-funo-seki*, signifies thunderbolt (account of Blackmore Museum, p. 222, on the "Myth of the Thunderbolt"). So also (p. 223) in Java and Malay Peninsula. Among modern Greeks they are called *ἀστροπελέκια*, or star hatchets (p. 224). Also, says Major Godwin-Austen, in the Kossyah Hills, and in various parts of the Burman Peninsula. Mr. W. Blackmore stated that in Jamaica these objects are still called thunderbolts, and among the Pueblo Indians after a storm the natives go out to seek for celts. Among the Guaranis of Brazil the name for a stone axe is *korisko*, which signifies lightning. As this superstition is so widely distributed, it is not of independent origin, but distributed by migration in prehistoric times.

DISCUSSION.

Major GODWIN-AUSTEN said: The idea that stone celts are thunderbolts is very common all through the hills from Burmah to the Khasi Hills, and has more than once come personally to my notice. The Goorkhas also attribute to them the same origin. I do not know whether they have ever been recorded from that part of the Himalaya, but they are known to the people, and should be looked for there. A stone celt was found by Captain Badgley, of the Topographical Survey, at Shillong, lying on the surface, who kindly allowed me to take it to Calcutta for the museum there. When packing it up some Goorkhas of the establishment were standing by, and one of them at once made the remark in Hindostani, "Such a stone falls with the lightning."

The PRESIDENT and other members made some remarks.

The following paper was read by the author :—

On the ETHNOGRAPHY of the CIMBRI. By CANON RAWLINSON.

THE data for determining the ethnological character of the great Cimbric nation, which, in the year B.C. 102-1, threatened the very existence of Rome, are unfortunately exceedingly scanty; and in dealing with the question one feels that one is moving rather in the cloud-land of historical conjecture than on the firm and solid ground of ascertained or ascertainable fact. Nevertheless, having been invited by your excellent President to read to you the paper upon the subject of the "ethnography" of the people in question, which I wrote hastily for the Anthropological Section of the British Association at Bristol last September, I venture to trouble the meeting with a few remarks. In doing so I must crave their indulgence on the double ground of necessarily hasty composition, and of the impossibility under which I lay of consulting many of the authorities with whose views I could have wished to have refreshed my memory, but whom I found it impossible to consult in Bristol.

First, then, let me say a few words as to what is historically known of this people. The name Cimbri first appears in history towards the close of the second century before the Christian era, about the year B.C. 113, when the Romans were suddenly alarmed by intelligence that the north of Italy was threatened by a new enemy, which, having burst a way through the territory of the Boii—probably the people of Bohemia—proceeded southwards, through Noricum, to the passes of the Carnian Alps (S. Tyrol or Carinthia probably), where they completely defeated the Consul, G. Papirius Carbo, who was at the head of a large army. They did not, however, at this time invade Italy, which lay open to them, but, with the fickleness of a barbarous race, turned their arms in another direction, proceeding westward, along the northern skirts of the Alps, and across the Rhine into south-eastern Gaul. Here they came for the second time into contact with the Romans, and defeated with great slaughter a second Roman consular army, under M. Junius Silanus. They were then for some years occupied with ravaging south-western Gaul and northern Spain; but in B.C. 105 they once more returned into Roman territory, and, under their king Boiorix, engaged the Romans near Arausio (Orange), and again gained a great victory. Eighty thousand Romans are said to have fallen. Still Italy was not invaded. The Cimbri contented themselves with fresh ravages in Gaul and Spain, which last they attempted to conquer. Beaten back, however, by the brave resistance of the Celtiberians of the Peninsula, they, in B.C. 103, came to the determination of at

last invading Italy. Having entered into alliance with the Helvetii and Teutones, they agreed upon a joint attack upon Rome. While the Teutones entered Roman Gaul, and threatened the passes of the Western Alps (Great St. Bernard, Little St. Bernard, &c.), the Cimbri, with their Helvetic allies, re-crossed the Rhine, skirted Switzerland, and returned to the eastern Alps—the scene of their first victory—threatening to invade Italy from the Tyrol. The great Marius was appointed to confront the imminent danger. Having met and defeated the Teutones at Aquæ Sextiæ, in Provence (B.C. 102), he re-entered Italy, and proceeded to contend with the other assailing army. This army had descended the Adige, driven a Roman force before it, and made itself master of the whole country between the Alps and the Po, as far as the neighbourhood of Milan. Here the Cimbri wintered. They were hoping for the arrival of their Teuton allies, and therefore waited; but the coming of spring showed them Marius in the field, and brought them intelligence of the entire destruction of their friends. Still they were not daunted. Challenging Marius to the combat, they engaged him in the plain of the Po, near Vercellæ, on July 30, B.C. 101, and after a desperate hand to hand conflict were completely defeated, and (as we are told), annihilated. This is the last that we hear of the great invading nation of the Cimbri. They flash like a meteor across the historic heaven, strangely brilliant while within the field of our vision, but coming out of almost utter darkness, and returning to it. Whether it is really the same people which we find under the same name in the pages of the later geographers and historians as inhabiting the peninsula of Jutland, and some of the country between the Rhine and the Elbe (Strab. vii. p. 426), must be regarded as a little uncertain. Strabo identifies them, and believes the conquering Cimbri to have proceeded from the coast of the German Ocean to Italy; but, if we accept the identification, it will help us but little in our speculations upon Cimbric ethnography, since we have no trustworthy account of these northern Cimbri, and know nothing of them but their position.

With respect to the ethnological character of the Cimbri there are, I believe, but two theories—that they were Germans or that they were Kelts. In favour of the theory that they were Germans the following considerations have been urged:—

1. The supposed etymology of their name, which is referred by some to the root "*kämpfer*," a fighter; by others to "*chempho*," champions.*

* See Mommsen's "*Roman History*," vol. iii. p. 178; and compare Pallmann, "*Kimbern und Teutoner*" (Berlin, 1870), p. 27. The latter writer suggests a third etymology, viz. from (Skandinavian) *kimpari*, "to rob;" whence "*kimpari men*."

2. Their geographic position, before they began their wanderings, in Jutland and between the Rhine and Elbe, where the other tribes were undoubtedly, in the main, if not altogether, German.

3. Their close alliance, during the days of their glory, with a people whom all allow to be probably Germans, the Teutones.

4. Their physical characteristics of blue eyes and flaxen hair, so light in the children that the Romans compared it to the white hair of very old men.

5. Some points of their manners and customs, especially the fact that their armies were accompanied to battle and directed by *priestesses* rather than by priests.

6, and lastly. The statements of Julius Cæsar, Strabo, Pliny the elder, and Tacitus, who include the Cimbri in their lists of German nations.*

Before proceeding to the reasons which are alleged for the opposite theory, I propose to examine briefly the force of these six arguments.

1. The supposed etymology. I do not think that the Romans are likely to have made the word Cimbri out of either *kämpfer* or *chempho*. Possessing an "f," there would be no reason for their substituting a *b*, nor in the latter case for their adding an *r*. *Kämpfer* would probably have been represented by *Camferi* or *Camfri*; *Chempho* by *Camfones* or *Camphi*. Thus I think that neither of the suggested etymologies is tenable, neither being in accordance with the laws of Latin phonetic change. It may be added that neither receives any support from the statement of certain ancient authors,† that the word Kimbri meant "robbers;" for I suppose it will be granted that neither "fighters" nor "champions" are necessarily thieves.

2. The geographic position of the Cimbri, in Jutland and between the Rhine and Elbe, may raise a certain presumption that they were Germans, but the argument is one of very slight force. It is granted that on the Upper Rhine and Upper Danube Celtic tribes were mingled confusedly with German;‡ and it cannot be pronounced impossible, or even improbable, that there was a similar intermixture further north. The peninsula of Jutland is exactly one of those positions into which a weaker race retreats when forced to yield before a stronger one; and if the Celts (as is probable) were spread over

* Cæsar, "De Bell. Gal.," i. 33 and 40; Strab., "Geograph.," vii. p. 421; Tacit., "Germ.," 57; Plin., "H. N.," iv. 14.

† As Plutarch, who says, *Κίμβροι λεγόμενοι Γερμανοὶ τοῖς ἑσπέραις*.—Mar., § 11.

‡ It is curious that Festus makes the word have this meaning in Celtic. (See "De Verb. Signif.," iii. p. 77—"Cimbri lingua Gallica latrones dicuntur.")

‡ Mommsen, vol. iii. p. 173.

most of central Europe before the Germans arrived from the East, Jutland would very probably be held by them when the continent generally was yielded to the invaders.

3. The alliance between the Cimbri and the Teutones again tends to raise a slight presumption; but its force is (I think) outweighed by the far closer alliance between the Cimbri and the Helvetii, these latter being an admittedly Celtic tribe.

4. The physical characteristics are allowed to be such as "apply to the men of the north generally,"* while they are supposed to be "especially applicable to the Germans."† I conceive that the basis of this argument is the fact that the Cimbri are spoken of as yellow-haired‡ or flaxen-haired, rather than as red-haired, and that the children's hair seemed to the Italians almost white. Now, I believe it is true that the Celtic hair does generally incline to red and the German to flaxen; but I have myself seen vast numbers of quite flaxen-haired children in Wales, and I beg to throw out as a suggestion that red hair is rather characteristic of the non-Cymric element of the Celtic race—the Irish and the Highlanders—than of the Cymric. In this respect, then, as also in the fact of their "bright blue eyes,"§ the description of the Cimbri will apply as well to the one race as to the other, and so does not help us to draw any conclusion; but their bodily contour and physique—their tall, lank figures"|| and easily relaxed frames, are Celtic rather than German, and stand in the way of the German theory.

5. The question of the direction in which the manners and customs of the Cimbri point is one of great difficulty. We know but very little of their customs, and not much more of the customs of the ancient Germans. The "Germania" of Tacitus is not to be depended on. It was written (I believe) rather as a satire upon imperial Rome than as a serious description of the then existing condition of the German people.¶ But I fail myself to see any sufficient ground for the assertion that their habits—so far as known—were predominantly German. It is allowed** that "their system of warfare was substantially that of the Celts of the period;" and that the wagons in which they moved from place to place "universally accompanied the Celts in their encampments."†† I find no point in their habits dis-

* Mommsen, p. 179.

† Ibid.

‡ *ξανθοτριχες*.

§ Mommsen, *l.c.*

|| Ibid.

¶ See Merivale, "Roman Empire," vol. vii. p. 298: "The *Germany* presents an elaborate contrast between the vices of a polished age and the virtues of barbarism. It is an alarum rung in the ears of a careless generation, more solemn and impressive in its tone . . . but hardly more sound than Lucan's rhetorical outcry."

** Mommsen, "Roman History," vol. iii. p. 179.

†† Ibid.

tinctly singled out as "Germanic," except the part taken by priestesses in their battles. On this subject I will read the account given by Strabo of this matter, and leave it to my hearers to judge whether the whole narrative does not accord better with what we know of the bloody rites of the Druids in Gaul and Britain than with what the most trustworthy writers tell us of the religious temper of the ancient Germans. "It is reported," says Strabo, "that the Cimbri have some such custom as this. Their women join in their expeditions, and have among them some grey-haired priestesses, who wear white robes, and linen tippets (?) fastened with a buckle, and a belt of bronze. They go barefooted; and (after a battle) march with naked swords throughout the camp, examining the captives. Choosing some, they crown them with garlands and take them to a bronze basin which holds 20 amphoræ. There is a stage set up, and the priestess, mounting on it, cuts the throat of each captive in succession, holding him over the basin. From the blood thus collected they have a way of prophesying. Meanwhile, others of them disembowel the prisoners, and (after inspecting the entrails, declare to their friends what victories will crown their arms."*

I now come to the last argument—that of authority; and first as to Julius Cæsar. Now I have a great respect for the military and political genius of Cæsar,—I think him one of the greatest men that ever lived,—but I do not consider him much of an authority on ethnography.† Had there been reason to believe him personally familiar with Cimbri, as he was with Gauls, I should give great weight to his statement. But I think it exceedingly likely that he never saw one of the nation. The Cimbric prisoners taken at Vercellæ were but few—they were probably most of them sold into slavery in the plain of the Po; they would pine in servitude, and die off rapidly; and by the time that Julius reached the age of critical observation (the age of 20‡) I should doubt if many of them survived. Such as did, as domestic slaves or in the schools of the gladiators, would have become Romanised, and it would have been unsafe to draw any conclusions from them. These are the only Cimbri whom Cæsar was at all likely to have seen;§ for he never approached the Cimbric Chersonese, or crossed the Rhine, except for a couple of forays.

* Strab. vii. p. 427. † Compare Merivale, "Roman Empire," vol. i. p. 229.

‡ J. Cæsar was born B.C. 100, and was therefore 20 in B.C. 80, 21 years after the last battle.

§ Cæsar believed the inhabitants of Aduatua to be descendants of the Cimbri and Teutons (B. G. ii. 29). He had seen them and had perhaps noted some German features about them. But these might have been derived from the Teutons.

With regard to the other writers—Strabo, Pliny, and Tacitus—they appear to me not to be really contemplating the ethnological question. They divide Germany from Gaul by a sharp line—the course of the river Rhine; and then they count all the nations east of the Rhine as Germans. The terms “Gaul” and “German” are with them “geographical” rather than ethnological, and their statements have but little bearing on our present inquiry.

Thus far I have considered what may be called the German theory; I pass now to the Celtic one.

The advocates of the Celtic theory rely chiefly on five arguments:—1. The name Cimbri, which they identify with the term Cymry or Cymraeg, which is still the native name of the Welsh. 2. The predominant authority of the Greek and Roman writers. 3. The individual names of Cimbri, which are Celtic. 4. The fact that the Romans employed Celts as spies to bring them intelligence of the designs of the enemy during the Cimbric war. 5. The manners and customs of the people, which they hold to be far more Celtic than German. They also join issue on the argument from the physical characteristics of the race, which they hold to be, according to the description given, at least as near the Celtic as the German type.

1. The name Cimbri well expresses Cymry. The consonants of the two words differ only in the additional *b* of Cimbri, a very slight phonetic corruption; one natural to Romans; one which Roman writers assert was made in this very word;* and one which was made again when a Latin-speaking race fell in with Cymry in Britain. The corruption was, I say, natural to Romans, who made from *cum* and *uro* “comburo;” it was one asserted to have been made in this very word, which Diodorus and others say came by corruption from *Κιμνέριοι*; it was one which was repeated when Latin-speaking ecclesiastics became acquainted with the Cymry of western Britain, whom they called Cambri or Cambrici, and their country Cambria.† The only vowel change made in expressing Cymry and Cimbri is that of the *y*, sounded like our short *u*, into *i*, which is to be accounted for by the absence of that sound from the Latin language. As the *i* was not an exact equivalent, it was not constant, but was replaced on the second occasion by *a*, which was perhaps a little nearer.

2. The authorities who state that the Cimbri were Celts, and not Germans, include Sallust (“Jugerth,” § 114), Florus (iii. 3), Appian (“Illyr.,” 2; Bell. Civ. i. 29), Diod. Siculus (v. 32; xiv. 114), Dio Cassius (xliv. 42), and Orosius (v. 16). The

* Diod. Sic. v. 32; Posidonius, Fr., 75; Plutarch, Mar., § 11.

† The *b* appears also in the modern “Cumberland,” the land of the Cymry.

importance of these witnesses is the greater because they evidently intend their assertions ethnically, whereas the writers who call the Cimbri Germans seem mostly to speak in a geographical sense.

3. That the known Cimbrian names, such as Boiorix, are of true Celtic form,* is admitted by those who most strongly advocate the Germanic theory; and the explanation is given that the Cimbric horde would, in its wanderings, "welcome as brothers in arms all who joined it in the course of its movements," and would thus in all probability contain a Celtic element.† But that this accidental accretion should supply the actual leaders of the host must, I think, be pronounced very "surprising," and, in fact, most highly improbable.

4. The employment by the Romans of Celts as spies in the Cimbric war, is explained on this same theory, that the Cimbri were accompanied by Celts. The explanation is a possible one; but it can scarcely be denied that the fact of the employment of Celts as spies tells in favour of the Celtic rather than of the German theory; and that its force is not destroyed by the supposition of an intermixture, whereof there is no historical evidence.

5. The manners and customs of the Cimbri appear to me more Celtic than German. It is admitted that their system of warfare was "substantially that of the Celts."‡ Their use of wagons was Celtic. So was the participation of their women in their battles. So was their cruel treatment of their prisoners, and especially their offering of them to their gods in sacrifice. Altogether they were of a ruder and more savage type than the Germans, according to *any* representation of them, and one cannot but be surprised that the modern Germans should claim relationship with them.§

To sum up: in favour of the Celtic origin of the Cimbri are, 1. The near resemblance of the name Cimbri to that of one branch of the Celtic nation; 2. The assertions to that effect of so many ancient writers; 3. The Celtic character of the names of their chiefs; 4. The fact that Celts could be effective spies in the Cimbric camp; 5. The general character of their barbarism, and of the mass of their manners and customs; and 6. The main points of their physique. Against it, and in favour of the German theory, I can only see two points of any importance—the statement of Cæsar, and the fact of their hair being yellow or flaxen, rather than red.

* Cf., Ambiorix, Dumnorix, Orgetorix, Vercingetorix, &c.

† Mommsen, "*Roman History*," vol. iii. p. 179. ‡ Mommsen, *l.c.*

§ Here, as elsewhere, Niebuhr was above the prejudices of his countrymen, and regarded the balance of historical evidence as indicating that the Cimbri were Celts.

Nevertheless I am quite of opinion that the point is one open to doubt, and that, unless fresh data should be obtained (which seems to be very unlikely) it will always remain among the vexed questions which will divide ethnologists.

DISCUSSION.

MR. HYDE CLARKE said: I wish to call the attention of the learned author to a third solution, connected with his own reference to Kimmerioi, with whom the Greek authors had allied the Cimbri. In the process of history repeating itself, such an origin deserved consideration, and it was one which was in harmony with all the phenomena as much as the other two hypotheses. He was little disposed to place value on a linguistic point like Boiori, because Gaulish spies were employed for the reason that the Gauls were in contact with the invading Cimbri; and had the latter been German, the Gauls would have had more practice in communicating with them than the Romans, who were not at that time in contact with the Germans. Treating the irruption of the Cimbri as one proceeding along the coasts of the Black Sea, like the later migrations of Avars and Huns, they would come into contact with Helvetii, if not with Teutones, drive them on, and compel them to join the horde. Although the Kimmerioi had ceased to hold power on the Black Sea, their name was well known, and might have been given to the new invaders, or assumed by them. Such a horde would make its attack by the eastern passes of the Alps in Italy, and if defeated, remnants might be driven into Gaul or into Jutland, and in time conform to the language of their neighbours. With regard to physical or savage characteristics, they would apply as well to a Caucasian horde as to Celts or Germans. The Celts were at that period the least likely to raise a horde for such an invasion. With regard to the Celtic form of Boiori, that was most probably attributable to the Celtic spies applying their own kingly forms to the chiefs of the invaders.

The PRESIDENT and others took part in the discussion, and

Professor RAWLINSON said, in answer to the last speaker, that he did not at the moment recollect anything very distinctive in the defensive arms of the Cimbri. They had, like most of the northern nations, helmets, breastplates, and shields. Their swords were of unusual length, but badly tempered. Not enough was known on these points for any decided ethnological conclusions to be drawn from them. In answer to Mr. Hyde Clarke he would say, that it was of course possible the Cimbri might have come from the Caucasian region, but there was no evidence of it. All the evidence was the other way. The Greco-Roman writers unanimously brought them from the north, from the Cimbric Chersonese, or peninsula of Jutland, from the shores of a sea apt to encroach upon the land, and from the country between the Rhine and Elbe. No doubt there had once been a great people in the Caucasian region, whose name might seem to connect them with the Cimbri;

he meant the Cimmerii; and this people might (as believed by many of the Romans) have been of the same race. But this people, which was powerful in the time of Homer (at B.C. 1000), and again in the seventh century B.C., when they overran Asia Minor, had sunk into weakness long before the time of the great Cimbrie invasion, and could not possibly, if it still existed in or about the Caucasus, have sent out such hordes as those which, towards the end of the second century B.C., threatened Italy. He thought we must accept the unanimous testimony of the ancient writers as to the direction from which, and even (in a general way) the country from which, the Cimbri set out to make their attack upon the south. Tradition was rarely mistaken in such matters. In conclusion, he would repeat that the evidence seemed to him scarcely sufficient to justify any decided and absolute conclusion, but he thought there were strong grounds for regarding the Cimbri as either Germans or Celts, and on the whole it seemed to him that the balance of the evidence was in favour of the Celtic theory.

Mr. Brabrook read the following paper for the author :—

On the HUNEBEDDEN, or CROMLECHS, in the PROVINCE of DRENTHÉ, in HOLLAND. By D. LUBACH, M.D.

IN February, 1872, Mr. A. W. Franks made to the Society of Antiquaries a communication respecting the megalithic monuments of the Netherlands. His object was "to call attention to this interesting group of antiquities, and more particularly to direct the notice of the Fellows of the Society to the efforts that are being made by the Government of the Netherlands for the preservation of these precious memorials of the past." It is for this reason that his description of the hunebedden of Drenthé is very short; indeed, it does not take one page of the nine which his communication fills in the "Proceedings of the Society."

I have thought that it might be interesting to the British anthropologists and students of primæval antiquities to give a more detailed account of these remarkable remains, which are so little known in England, just as, to say the truth, the Netherlands in general are still in many respects a *terra incognita* for the English. This is proved by the great number of often incomprehensible errors with respect to the natural constitution, the inhabitants, their customs, and the institutions of this country, which are stated in English books as indisputable truths.

The province of Drenthé, in Holland, consists of a diluvial plain, the middle height of which above the surface of the sea is more than ten miles, gradually sloping towards the borders of the province. The soil consists of diluvial sand and loam,

mixed with stones and gravel—so-called Scandinavian diluvium, the stones and petrifications of which are the same as those of some regions of Scandinavia. A considerable part of this diluvium is covered with turf, and some small rivulets and brooks have set off along their borders a layer of clay.

Though agriculture in Drenthe has made great progress in late years, a great part of the soil still lies uncultivated. In general Drenthe is in many respects the most backward province of the kingdom of the Netherlands, and one often meets there much, especially with respect to institutions and customs, of which nothing is found in the other provinces.

If Drenthe is in this respect remarkable for the archæologist, it is particularly so on account of the grave-mounds, or *tumuli*, and *cromlechs* (these latter called here, as in North Germany, *hunebedden*), which are found here. These cromlechs are not found in other regions of the Netherlands, with the exception of a doubtful monument in the province of Utrecht, near a village called De Vuursche. The *tumuli* in Drenthe are not very high, generally 1 metre or $1\frac{1}{2}$. Their form is round, oval, or sometimes square, and their diameter is from 3 to 5 metres. However, there are also found oblong ones, some of which are from 3 to 5 metres in breadth, and from 10 to 30 metres in length. Formerly many of them were surrounded by circles of stones, which have now disappeared everywhere.

The diggings have taught that in the *tumuli* are found—(1) urns of rude pottery, containing burnt bones of men; (2) small heaps of human bones; (3) objects of earthenware, as drinking-cups and other vessels, discs, &c.; (4) implements of bronze, rarely of iron, but, with one exception, never of stone; metal spear-heads, arrow-heads, knives, daggers, the fragments of a sword, celts, in form very similar to those found in England, hairpins, fragments of armlets, &c. The urns are often adorned with lines or rows of punctures. If there are more urns than one in the same tumulus, then they are often placed one above another, and sometimes they are in an inverted position, with their mouths resting on the ground. In some *tumuli* no urns are found, but only heaps of burnt bones; in others there are found similar heaps and urns. There are found urns which contain small urns, filled with bones of little children; in this case the great urn probably contains the bones of the mother. The place of the urns and the heaps of bones in the *tumuli* differs greatly. They are placed—(1) simply in the earth of which the *tumuli* are made; (2) on a little mound of pebbles in the interior of the tumulus; (3) on a floor of pebbles; (4) between two floors; (5) within an enclosure of larger stones; (6) in a small cellar or cist in the form of a trough. Where a floor of pebbles is found

it sometimes extends very far outside the tumulus, underneath the surface of the heathy plain. The stones of the floor of a tumulus near Borger filled about a hundred carts. The earth of the tumuli is very frequently mixed with a considerable quantity of charcoal and ashes.

The opinion of the Dutch, and, if I am not mistaken, of most of the German antiquaries, is, that the tumuli of this description are Germanic.

The megalithic monuments of the Drenthe, commonly called "hunebedden," consist of large capstones or covering-stones, commonly of granite, supported by smaller upright stones. The uprights form two rows, with a space of one or two metres between them. The space between every two upright stones of the same row differs, but generally it is broad enough to suffer a man to creep through. The capstones are placed transversely, so that every capstone rests on the two rows or walls of the monument. The two longer sides of a hunebed, formed by these two rows, are never parallel; they constantly diverge towards the west, or towards that part which is nearest to the west, the consequence of which is that the inner chamber is widest at that end. Generally, also, the upright and the capstones increase in bulk towards the west end, and thus the whole hunebed is there not only broader, but also higher. The middle distance between the under surface of the capstones and the floor of the inner chamber is one metre. Undoubtedly the open spaces between the upright stones and the capstones originally have been filled up with small fragments of rock. In the hunebedden that are best preserved, each end of the inner chamber is closed by one stone that in every respect resembles the upright stones which form the longer walls of the construction, and each of which forms one of its two smaller sides. The Dutch antiquaries call these stones *sleitschoenen*, closing-stones; we shall call them end-stones. It is not probable that the entrance of the hunebedden was at one of the smaller sides; it seems to have been at one of the longer ends. In many instances there is found a so-called "portal," consisting of two rows of two or three stones each. These rows are at right angles with one of the longer sides of the hunebed, and placed rather towards the south end. These portals are never covered with capstones, but in Germany they are, and it is highly probable, if not certain, that the portals of the hunebedden of Drenthe formerly possessed them too.

The outer side of the upright stones is always rough and angular, or somewhat rounded; the inner side, on the contrary, is flat, and sometimes so smooth that it seems to have been roughly worked. The same is the case with many of the cap-

stones, the under surface of which, forming the ceiling of the inner chamber, is not unfrequently very smooth. Some of the capstones, the outer surface of which has a somewhat rounded form, bear at a distance a resemblance with huge bed-pillows flung across the two walls of the hunebed. If the capstones of all the hunebedden had such a form, which is not the case, however, it might be conjectured that the hunebedden (beds of hunes) were so called because of the resemblance. In some of the stones of which the hunebedden are formed small holes are found, evidently bored, of the depth of 1 centimetre.

I must add to what I have remarked about the structure of the hunebedden, that many of them (originally, perhaps, all of them) are surrounded by a row of stones, that are placed at a distance of about three steps from the hunebed. The position of the hunebedden with regard to the points of the compass is not, as has been asserted, invariably in an eastward or westward direction. It appears from the researches of the late Mr. L. J. F. Yanssen that the position of the fifty hunebedden which he investigated is as follows:—

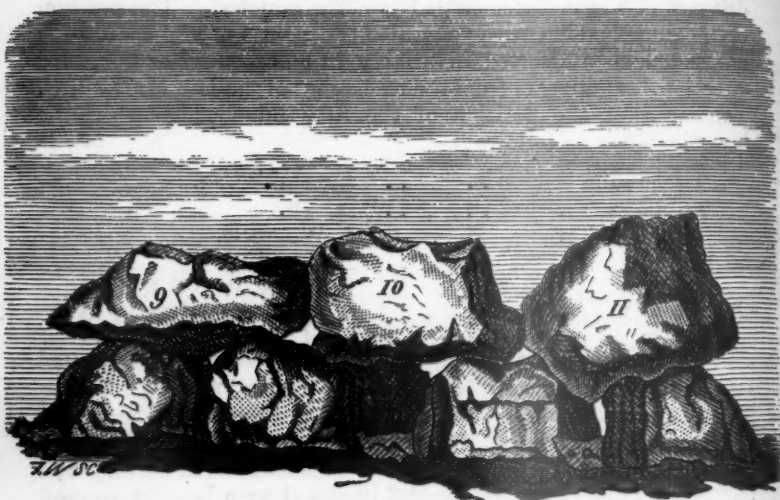
Of 15 hunebedden ..	..	E.—W.
Of 2 " ..	..	N.—S.
Of 24 " ..	..	N.W.—S.E.
Of 6 " ..	..	N.E.—S.W.
Of 2 " ..	..	N.W. by W.—S.E. by E.
Of 1 hunebed ..	..	N.E. by E.—S.W. by W.

At least two-fifths of the existing hunebedden are situated on the top of a low barrow or hill, in a hollow that is, however, rarely so deep that the monument cannot be seen at a moderate distance. In my opinion there cannot be any doubt at all that the hunebedden were originally covered with mounds of earth. The entrance of the portal was probably closed by a large stone, and perhaps it was also covered with sand.

In the province of Drenthe there are still existing 55 hunebedden. Their number has been much greater, probably the whole of Drenthe, especially the eastern half of the province, was once covered with this kind of structures. When Christianity was introduced in Drenthe, which happened in the latter half of the 8th century, the Drenths began to destroy the heathen monuments, previously regarded with awe and veneration. It is probable that many churches have been built of the materials gathered from the hunebedden. Part of the village of Odovru and of the tower of the church of Emmen, consist of irregularly formed stones of the same nature as those of the hunebedden. The same materials were used for the walls around the churchyards, for foundations of dwellings, for mark-stones, &c.

Afterwards many of the hunebedden have been demolished by gunpowder, to procure stones for sea-dikes and for pavements. A proclamation of the Government of Drenthe of the 21st of July, 1734, renewed on the 6th of November, 1818, by which it was forbidden to disturb the hunebedden and other ancient monuments, was of small avail, because the hunebedden are situated, in most cases, on grounds belonging to private persons, or are owned in common by the inhabitants of the adjacent villages, who, by inheritance, have a right in them.

In 1868 Mr. L. Oldenhuis Gratama, counsellor in the court of Drenthe, addressed an "open letter" to the college of the Deputy States of Drenthe. He asserted in this that the hunebedden are *res religiosæ*, and therefore *res hullius*, and that,

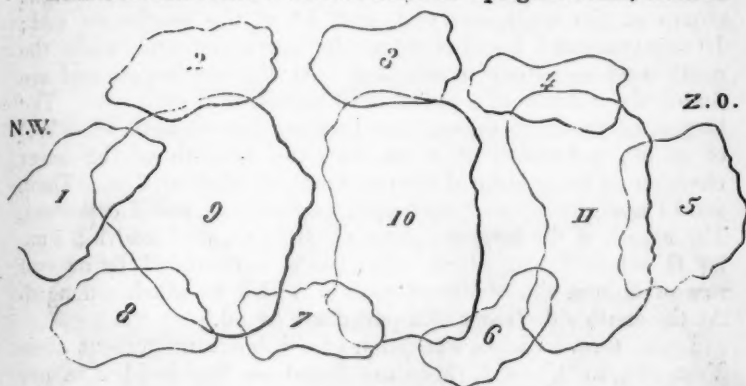


VIEW OF THE HUNEBED OF FINAARLOO.

according to our laws, they are as such the property of the state, which on that account is justified and obliged to take measures for their preservation. The Royal Academy of Sciences, on receiving this "open letter," addressed a letter to the Minister of the Interior, urging him to use all his influence for the preservation of the hunebedden, and in the Second Chamber of the General States, of December, 1868, Baron Slaet van de Beele endeavoured to instigate the Government to promote the preservation of these *reliquiæ*. Minister Sock, however, in order to avoid contention with the peasants of Drenthe, who are very jealous of their rights of property, chose another and more practical way, by voting a sum of money for the acquisi-

tion of the hunebedden by the state. By the care and zeal of the Royal Commissary of Drenthe, Mr. Y. L. G. Gregory, 31 of the 55 megalithic monuments of Drenthe have become the property of the state, and 21 the property of the province of Drenthe, while one belongs to some of the inhabitants of the village of Finaarlo, and another to an inhabitant of Westenesch. Many of the hunebedden and cists of Drenthe are much damaged and disturbed. Of some but a few stones are still existing; of others the stones have sunk and sunk, and have been removed from their original place, which is partly the fault of imprudent diggings in search of treasures and antiquities. The best preserved of the hunebedden is that situated near Finaarlo, which is regarded as typical. It is for that reason that I give a more ample description of it.

This hunebed consists of two rows of upright stones, each of



PLAN OF THE HUNE BED OF FINAARLOO.

three stones, two end-stones, and three capstones. There are neither traces of a portal nor of an outer circle of stones.

The length of the whole hunebed (S.E.—N.W.) is 5.70 m., its greatest breadth 3 m., its greatest height 1.57 m. The dimensions of the several stones are as follows:—

Upright stones and end-stones.

No.		Ms.		Ms.	
		is high	broad	thick	
No. 1	(end-stone)	0.75	1.00	0.46	
" 2	(upright stone)	0.70	1.00	0.56	
" 3	" "	0.75	1.25	0.53	
" 4	" "	0.66	1.00	0.75	
" 5	(end-stone)	0.71	1.00	0.75	
" 6	(upright stone)	0.72	0.92	0.35	
" 7	" "	0.64	1.00	0.58	
" 8	" "	0.72	1.13	0.32	

Capstones.

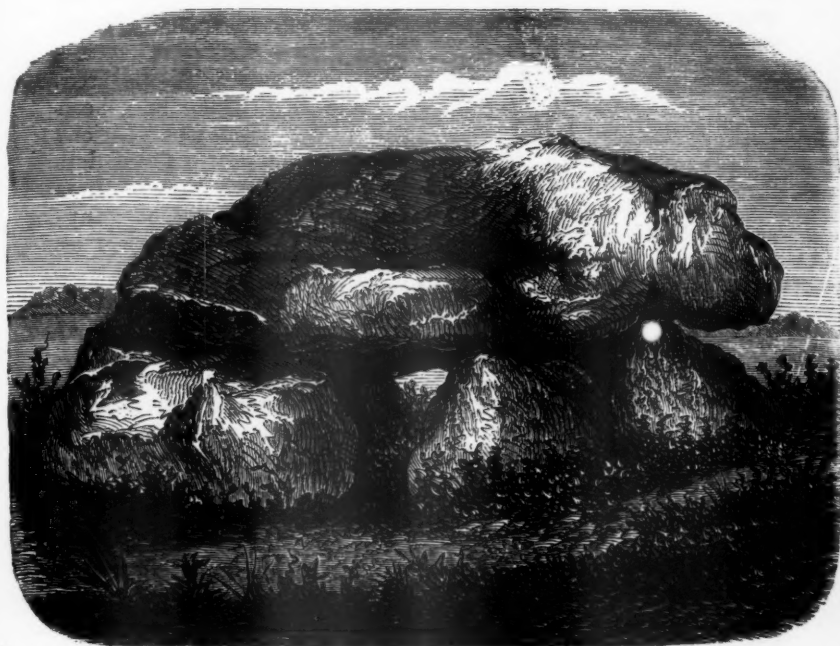
		Ms.		Ms.		Ms.
No.	9 is high	0.66,	broad	2.00,	long	2.00
"	10	" 0.81	"	2.00	"	1.00
"	11	" 0.88	"	2.45	"	1.26

All the stones are of granite.

Much larger, but also much more damaged, than the hunebed of Finaarloos is one of the hunebedden near the village of Borger, and another near Emmen. The former has a length (N.W.—S.E.) of 22 m., its breadth is 3.8 m., its greatest height 2.8 m. The breadth of the inner chamber is, at the west end, 2.5 m., at the east end 1.70 m. The space between the upright stones is 0.85 m. The length of the largest capstone, which is one metre thick, is more than 3 m., its breadth is 2 m. There are 12 upright stones at the north-east end, and 13 at the south-west end; 10 capstones and 1 end-stone at the south-east end, while the north-west end-stone is wanting. At the south-west end are found the remains of a portal of 6 stones, 3 in each row. The largest of the hunebedden near Emmen has a length (E.—W.) of 26 m., a breadth of 13 m., and the breadth of the inner chamber in the middle of the construction is about 3 m. There are 11 upright stones at each side, 2 end-stones, and 7 capstones. The length of the largest capstone is 3.75 m., its breadth 2.5 m., its thickness 0.5 m. The structure is surrounded by an oval row of stones, the southern part of which is much damaged. At the south side traces of a portal are found.

I said that, with the exception of a dubious monument at de Vuursche, in Utrecht, there are found no hunebedden in our country beyond the boundaries of Drenthe. An interesting specimen, however, exists in the province of Groningen, but it is situated very near the frontiers of Drenthe, and in a part of the province that formerly belonged to Drenthe. This is the hunebed of Noordlaren. It has 4 upright stones, 2 capstones, and 1 end-stone at the north-east end. It seems that originally it has been much larger, and that the biggest stones at the south-west end have been removed. The largest of the existing capstones has a length of 3.5 m., a breadth of 2.25 m., and is 1.5 m. thick. There are traces of a surrounding circle of stones. A fair and typical example of a hunebed, which is, however, of no great dimensions, may be seen near the road from Odovru to Emmen. It consists of 3 upright stones at the northern, and 4 at the southern, side, with an end-stone at each end, and 4 capstones. The length of this hunebed is 5.5 m., its breadth 2.2 m., its greatest height 1.5 m. All the stones are in their right places, but, to say the truth, this hunebed has been restored.

Between the hunebed of Finaarloos and the scanty remains of other monuments of the same kind, only consisting of a trilith or some scattered stones, there are others in all grades of preservation or destruction. My purpose is only to fix the attention on the hunebedden of Drenthe, and to give a general idea of their structure, not a complete description, and therefore I don't think it necessary to expatiate on other monuments of the same kind: for instance, the picturesque hunebedden near Rolde, or one of those near the way from Borger to Rumen, the capstones of which are uncommonly flat on the upper side; the triple



VIEW OF THE HUNEVED OF NOORDIAREN.

hunebed near Emmen, which may be compared to the double cromlech of Plas Newydd (Jewitt, "Gravemounds and their Contents," page 54), and others. But I must say something about three monuments that are not hunebedden, that is to say, that are not cromlechs but cists (Dutch, *grafkelders*, i.e., grave-cellars). One of the three was discovered in 1756 near the little village or hamlet of Eext, in a tumulus on the heathy plain. The visitor ascends a low tumulus, and arriving at the top finds in it a quadrangular cave or cellar, into which he

descends by means of a kind of stairs of four steps, formed of pebbles. The cellar has a depth of 1.3 m. The northern and southern walls consist each of three flat stones, tightly joined together, but the stones of the southern wall are not so broad as those of the northern, because a space of 0.6 m. has been used for the stairs. The breadth of these walls is about 3.7 m. The eastern and western walls are made each of one stone, the eastern having a breadth of 1.7 m., the western of 2.05 m., so that the cellar is somewhat broader at the west than at the east side. It will be remembered that the hunebedden also are somewhat broader at the west side, and that the portals are always found at the south end. The floor of the cellar consists of earth covered with grass. When it was discovered it was covered with three capstones, which have, however, disappeared.

Recently two other cellars of a similar description have been found near Emmen. I visited these in May, but my occupations did not permit me to examine them very closely. The cellars are very near each other, and the space in which both of them are found is surrounded by an oval row of stones, which I suppose to be about 1.5 m. high and 0.9 m. broad. The capstones have been preserved.

It is my opinion that all the hunebedden have been explored. In ancient times many have been destroyed in the hope of finding treasures in them. Afterwards they have been searched by antiquaries, but, as it seems, not always with sufficient care. It appears from the researches of the latter that, after removing the sand from the floor of the inner chamber, a floor of pebbles was found; beneath this floor, and sometimes resting on another floor, were found, imbedded in sand mixed with charcoal and ashes, urns with burnt bones, fragments of rude pottery, arms, and other implements, in contradistinction to the tumuli, always of stone, never of metal; celts, knives, arrow-heads, hammer- or axe-heads, &c., partly made of flint, partly of granite, syenite, serpentine, jasper, agate, chorite, &c., and of various degrees of finish and workmanship. Between the two floors of the grave-cellar at Eext, there are found urns, celts, a hammer or axe with a hole in it, a flint arrow-head, and a globe of *yzer-oor* or iron ore (hydrate of oxide of iron), a substance frequently found in layers in the diluvium of the Netherlands.

As I have said, it was merely my intention to give an idea of the structure of the cromlechs of Drenthe, not an exhaustive description of these monuments. I only remark that the general opinion of the Dutch antiquaries and ethnologists is that the hunebedden are prehistoric places of sepulture, erected by a pre-Germanic race, that was not, or not yet, acquainted with the use of metals. I have explained this more amply in a paper on

the hunebedden, in the Dutch monthly journal, *Album der Natuur*, but a full examination of this subject cannot find a place within the narrow compass of the present communication.

The meeting then separated.

MAY 23RD, 1876.

AT a SPECIAL MEETING held in the Theatre of the Royal School of Mines, Jermyn Street, by permission of the Director-General of the Geological Survey,

Colonel A. LANE FOX, *President, in the Chair,*

Lieutenant CAMERON, C.B., R.N., gave the following account of the anthropology of the regions traversed by him in his recent journey across Africa.

The lecture was illustrated by diagrams enlarged by Captain Dillon from Lieutenant Cameron's own sketches, by maps, and by objects from the West Coast of Africa, for comparison with similar ones described by Lieutenant Cameron.*

The PRESIDENT: The remarks which I shall make by way of preface will be very brief. We are mainly indebted to the Geographical Society for originating this successful expedition of Lieutenant Cameron. This Institute is not in a position to originate important investigations of this kind. The reason of that, I am sorry to say, is, because the people of this country know their geography far better than their anthropology—if it can be said that the majority of persons have any knowledge of anthropology at present. We have compulsory geography, but not at present compulsory anthropology, and I am afraid it will be some time before people realise the fact that “the proper study of mankind is man.”

But we are not without some claim to the honour which Lieutenant Cameron is about to do us to-night. He is the first African traveller who has gone out with a prepared list of queries furnished by the Anthropological Institute. The expedition was got up in a great hurry, but as soon as it was decided upon, the officers of the Geographical Society, with the friendliness to anthropologists which they have always shown to us, immediately informed us of it. Not more than two or three days were allowed us, but I immediately set to work to get up a series of queries from some of our leading anthropologists, amongst whom were Mr. Franks, Mr. Evans, Prof. Rolleston, Dr. Beddoe,

* The illustrations for Commander Cameron's paper will, it is hoped, be given in the next number of the Journal, but they are unavoidably postponed for the present.

Mr. E. B. Tylor, and others, and those queries were printed in a little book just in time to put them into Lieutenant Cameron's trunk after it had been packed up. I trust those queries may have been of some use to him; at any rate they could not fail to impress him with the fact that there existed in this country a body of anthropologists who were deeply interested in his travels, the result of which he is going to give us to-night.

Lieutenant CAMERON: It is with a considerable amount of nervousness that I come here to-night to talk about anthropology, which I believe to be one of the exact sciences, and, as a sailor without any particularly exact education, I cannot claim to be an exact scientific man. Another great difficulty about the anthropology of Africa is this, that the east coast of Africa has been flooded with emigrants, colonists, and traders from all the Semitic tribes of Asia. Owing to this the diversities of type are many and various. The pure type of negro does not at present exist on the east coast. We have heard of different waves of people arriving on the east coast, who afterwards were driven further into the interior. According to tradition the Kafirs are descended from heathen Arabs before the time of Mahomet. The Hovas of Madagascar are of Malay origin, and as I travelled away from the coast, I believed by the form of feature that the Wanyamwesi were the same race as the Hovas. The Hovas wore long hair reaching down their backs, which, owing to the mixture of negro blood, the Wanyamwesi could not do, but in lieu thereof they wore long ringlets made of fibres of trees mixed with their wool, and some wore wigs reaching down their backs, made of the same material. Another proof of the identity of the Wanyamwesi with the Hovas was this: everywhere the Wanyamwesi used bellows worked vertically, worked up and down with their hands, and covered with hide. The only case where the goatskin bellows are used is where the civilisation of the Arabs has extended.

The manners and customs of these natives have been so fully treated of by Captain Burton, that all I have to do with reference to those nations is to refer you to the work of Captain Burton, a work which for minuteness of description and for accuracy of detail in every branch stands unequalled. Burton alone, of all men who have travelled in Africa, has collected all these facts and put them into a readable form in a short space. His work, unfortunately, has never been published beyond the Journals of the Geographical Society, but it ought to be in the hands of every one who feels any interest in Africa. I travelled through that country with Burton's book in my hand. I did not believe such a book could have been written, it was a verbal photograph of the countries

through which he passed. After I left the countries through which Burton had travelled, my first considerable journey was round the southern portion of the Tanganyika. Most of the tribes I first saw had been so mixed up with slave traders that very few marked peculiarities remained. At Ufipa we found the people almost ignorant of the outside world. They wore cotton cloth of native manufacture, which was a coarse sort of heavy cloth, the patterns of which were a sort of shepherd's plaid, or a white ground with large squares formed by black lines, all having the inevitable fringe. They cultivated cotton and wove it themselves. They were expert makers of pottery. They worked their clay with water, until it became a perfectly homogeneous mass, and gradually formed it into a rough shape, and as they wanted it they worked it with pieces of broken gourds to give the curves, and when finished they were as truly formed as any of those dug up in Pompeii or Herculaneum. Passing down the coast of Tanganyika, at the south end we found the greater portion of the inhabitants had deserted their villages owing to the arrival of the Watuta, the same people as the Mazitu of Dr. Livingstone. They held the country under contribution, destroying the villages and carrying off live stock of every description, and when one country was desolated, seeking plunder in fresh fields. The natives are always afraid of resisting them, as any resistance results in indiscriminate slaughter. However, these Watuta are never unfriendly to the caravans that pass them. They have a wholesome dread of gunpowder.

After rounding the south end of Lake Tanganyika, we went up the western coast to a point rather beyond the Lukuga. We came to the Waguhha, which are simply a branch of the great nation of the Warna. These Waguhha welcomed me warmly when I came to them. Their differences are very marked from the tribes east of the Tanganyika. They dress their hair in a very elaborate manner, dividing it into four portions, each of which is worked into a plait turned over their heads with the ends doubled back so as to make a sort of cross of plaits, and the edges are ornamented with cowries, beads, and other things. It looks very much like a coronet. The ladies usually wore tattoo knives. Tattooing does away to a great extent with the necessity of clothing. The clothing only consists of a piece of cloth round their loins and an apron reaching to the knees in front. The patterns are depicted on the diagrams. These women all seemed to be very happy in their relations with the chief.

After leaving Ugubha I went to Ujiji, and after sending some things down to the coast, returned to the west coast of Tanganyika and marched on to the west. After a time I came

to Ubûdjwa. The ladies here adorn their faces with paints of different colours. In the lower classes there were several very peculiar habits. The women especially amused themselves—I don't know whether it is an amusement—by perforating their upper lip, and inserting a stone an inch or an inch and a half in diameter, which projected in front something like a duck's bill, and caused their speech to be very inarticulate; their own countrymen could not understand them. Their clothing was a small cloth in front and what looked like leather sewn into the shape of buffaloes' horns, of which a lady of rank wore three or four. From Ubûdjwa we went to Uhiya. The people here wore what were called, when I left England, "chignons," made of leather. These were about the most hideous head-dresses that ever were invented. The other part of the dress of the women of that country is shown on the diagram. Then we passed on to the people who wore straws through their noses, and the hair worked into various forms.

Passing over some mountains we came to Uvinza; here we found people with their hair done neatly and regularly with mud worked into it. Then we came into a country where we found the clothing of the men consisted of a small skin in front and behind, whilst for a woman this would be a large amount of clothing, for a lady wore only a string round her waist, with two small aprons depending from it. The men worked their hair into different forms, plastering it thickly with clay, and between the particles of clay shaving it clean. The ladies wore something very like an old-fashioned bonnet. There was little or no tattooing. In this country of Manyuema the huts are like the sketch, with gable ends, and the villages are built with long streets. The oil palm is planted up and down the whole length of the streets, and there are small huts in the centre for granaries or small stores of ivory. Going on through Manyuema, the Arabs got into trouble with the natives, who were in great force. Luckily they had no arms except wooden shields and spears. After a few days the affair was settled, and we went on again. We then came into a country where the iron trade is in full force; in fact this country might be called the "black country" of Africa. I have seen foundries 50 feet long by 30 feet wide. As many as 20 bellows are worked at one time, and 150 to 200 pounds of metal are frequently obtained in one smelting. Afterwards, as it runs out of the furnace, the iron is at once hammered into small pieces, weighing about three or four pounds, with long pieces at each end. The general work of the smiths in this part of Manyuema is astonishing, not only articles of ordinary use, but also, to a great extent, of ornament are made. The shapes

of their knives are various. The blades of their swords are inlaid with copper for ornamentation, and I have seen pieces of iron-work, with representations of the human form, made by means of hammering. They have no files, but only a rough chisel and a hammer, nevertheless many things they turn out are as completely finished as if they had been worked out by the most experienced artisans in England. From there we passed on to the Lualaba river, where first I came into contact with the Wagenya. They only live on the islands in the river and on a strip of land on its left bank. The Wagenya possess the whole carrying trade of the river, carrying people to the different markets, which take place in different localities nearly every day.

The women occupy themselves in catching fish and making pottery. Nearly all the pots are of a large egg-shape, but this pottery and many others are also brought by other tribes. The rest of the country is split up into many small tribes, every village, or every other village, having a chief. The Arabs take advantage of these divisions and the consequent feuds to carry on the slave trade. After leaving there I had to strike away south, and as I went on, the first chief of importance I came to was called Russuna, where I was warmly welcomed by him and his wives—a very much warmer welcome than I cared about; however they were the best-looking ladies I ever saw in Africa. They came to my tent to visit me, and were very much puzzled to know whether I was white all over: I thought they were going to pull off my clothes.

We went on and came to the camp of Tipo-Tipo, where I received a visit from a chief called Kasongo, who must not be confounded with the great Kasongo chief of all Urua. It was rather longer work than a levée in England. We were turned out about half-past six. There were his chamberlain, his aide-de-camp, his commander-in-chief, and a man who was evidently master of the ceremonies. We sat in an open hut waiting for him. The master of the ceremonies told each person where he was to wait. After about three or four hours there was a great playing of drums and other musical instruments, and Kasongo himself, with a number of his daughters, arrived, and they favoured us with a dance. He looked upon it as a very serious business at the time; he had his sword on his shoulder and his daughters danced opposite to him. After he had done his dance he was brought into a shed and we had a long talk, and the chamberlain told him that he was a very great man—however, I had reason to form a different opinion. I then went on working south, and the tribes began gradually to assimilate more in

appearance. On our way down we found in many places that the men wore enormously long beards, plaited and twisted till they came down to their waist. It was simply like a Chinaman's tail grown on a man's chin. The arrows and bows were the largest I have seen in Africa. The arrows were a yard long, and I have seen a man with a bent bow which reached up to his chin, resting on the ground.

Coming to the capital of the great Kasongo we got into a little trouble, which has nothing to do with anthropology or ethnology; the only thing that caused the row was that we were a small party, and they thought we must necessarily be slave traders (the guides were very bad in translating what I wanted to say), and for this reason they wanted to revenge themselves by robbing us of our stores and making slaves of us.

We then came down to the capital of Kasongo, the great chief of Urua, which is the most important state of Africa; it extends from 4.30 to 13 degrees south. It extends from Tanganyika to $24\frac{1}{2}$ east longitude. The chief, by tradition, is one of an old family, and closely related to Mata Yafa, the great chief of Ulunda. The ranks are well defined in this country. I have seen a man, who is considered ordinarily to be a very important man indeed, dare to sit down whilst a man of superior rank was standing up; he was called away, and reprimanded for sitting down in the presence of his superiors. If I had not been there he would have lost his ears. The chief himself was not approached by his subjects without their bringing him bags full of pipeclay or cinnabar as presents. They used to rub themselves all over the breast and up their arms, and used to sing out a great many different titles. On great occasions they had not only to do this, they had to whiten their faces, arms, and legs.

There was a great levée whilst I was there, and a Portuguese trader, an Arab trader, and myself had all to attend. All the chiefs came in their Sunday go-to-meeting clothes, with a boy carrying his bag of pipeclay. Each as he came up gave his sword to the boy carrying the bag, rubbed himself over with pipeclay, and, after nearly covering himself with it, took his sword, made a rush as though he were going to cut down the chief, and, shouting out all his titles, went down on his hands and knees before him, whilst the chief stood up perfectly erect in front. On one side of the chief was the chamberlain, dressed in a tiger-skin apron reaching up to his shoulders, with a long stick; in front stood another of his aide-de-camps or equerries holding a peculiar sort of axe, and behind him a woman holding a similar one. As every man came

up to him there was a sort of chant about the greatness of this Kasongo. He gave us a speech of about two hours relating to the greatness of himself; he was the greatest man in the world. The only man to be compared to him was Mata Yafa, who was his friend and relation. In the same country I saw a performance of fetish men. I heard a row going on, and I saw a man going round with a small bunch of bells behind his waist, and two women and a boy following him. He had round his neck a huge assortment of nasty objects, dried birds' heads, &c.; his face was whitened, and he wore a broad band, a foot deep, covered with beads, with a sort of grenadier's bearskin of feathers above it. He walked round the village for some time, and then sat down. I saw that some of the women apparently worshipped him. Afterwards came another gentleman, similarly attended and dressed, until four or five of them were there.

All the natives came to salute them. They brought very good pay for their priests, and they consulted the idols. Some of the priests were very good ventriloquists, and made the idols appear to give answers—favourable answers—to what the people inquired about. If a man did not bring a sufficient offering, the answers were not favourable; as the gifts increased the answers became more favourable. A further curious thing I heard about in Urua is the only system of actual worship I heard of in Africa. There was an idol called Kungwé a Banza, who is supposed to have his home in a jungle, to which nobody has access except a woman who lives there as the wife of this idol. The whole place is guarded by priests. I tried very hard to find out where he lived and to pay him a visit, but I never could get a true direction as to his place. I knew very well that great amounts were paid by different people and different chiefs to the priests. I used to get behind a man and say "Kungwé a Banza," and the man seemed frightened, and jumped almost out of his skin. I tried very hard to get some actual knowledge about this, but I only got very vague descriptions.

These people won't allow anybody to see them eat or drink, and they are especially particular about any of the opposite sex seeing them eat or drink. I had to pay a man to let me see him drink; I could not make a man let a woman see him drink. Another peculiarity is that every man and woman cooks independently; each person must have his own fire. The chief had about 3,000 women. He marries in the most indiscriminate manner; amongst his wives are his sisters, his mothers-in-law, and his own daughters, and indeed anybody he fancies is instantly added to his harem. We then passed through

Ussambi and came to Ulunda. In Ulunda we found the country all jungle and wild. I have no doubt Mr. Cooley is perfectly correct as to the name being wild country. The people dress very badly, and are ragged and careless in appearance; they are very timid in approaching strangers. They don't have any large villages, their clearings are only two or three acres in extent, with one or two huts in them. Their huts are like rabbit-hutches or dog-kennels; I have seen them only four feet high.

In Ussambi and Ulunda are great quantities of copper brought for sale. The diagram represents the size and shape in which it is brought for sale. The St. Andrew's crosses weigh about three or four pounds each; about twenty of them constitute a load. A smaller one of about one-fifth of an inch long in diameter, is dug up near the Lualaba; it is the only trace of the civilisation of the ancient inhabitants I have found in Africa. I have never been able to trace where or when they were made; they are dug up in large quantities. They find it sufficiently profitable to work up these small pieces into larger ones.

Passing on from Ulunda, we came to the country of Lovalé, where we met numerous caravans which had come from the coast to purchase bees' wax and slaves. The people are chiefly remarkable for the shape and variety of their arrowheads, showing an acquaintance with the smith's art, while the iron is imported from countries on both sides of them. Among the industry and exports of the people of Lovalé are the fish which they catch. Their country lies on the watershed, and in the rainy season the country is flooded about 2 feet 6 inches deep for a long distance. The people form small dams, and when the water drains off they catch their fish; these are smoked and dried, and with them they obtain their necessary supplies of cloth, salt, beads, and other things they wish for. The people of Lovalé go in numbers with the people of Bihé to obtain slaves, and are greatly interested in continuing the slave trade. The country is a poor country except for the supply of fish, and as long as they have the power they will get slaves from the eastward of them.

We next came to Kibokwé. This country is more hilly, and they have not the resources of fish; the great article of trade is bees'-wax. The honey, which would be a drug, they utilise by making a sort of mead, which I found was very good, when I had been nearly two years without anything to drink except water and coffee made out of Indian corn: I believe many people here would think it very good. All these people were very strong on different fetishes; every tree, if you leaned

against it, was a fetish tree, and unless you paid a heavy fine some trouble would come to the village. In fact, these fetishes were anywhere and everywhere, and were much used to bother and annoy passers by. When I got to Bihé I found a few Portuguese settled: they claimed the settlement without the slightest right. The chief considers himself a great man; he wants every white man to sit down at his feet and kneel down to him. I told him I was not a trader, I bore Her Majesty's commission, and I was not going to do anything of the sort, and I was as good a man as he was, and he had to give up his idea, though he makes the Portuguese do as he pleases. At Bihé I found, owing to the constant communication with the coast, that the greater part of the distinguishing marks of tribes had faded out, and that the great number of slaves brought down had made it difficult to find anything peculiar to Bihé. For twenty years a man called Msiri, a chief from Ukalaganza, has been settled at Katanga, and he has forced all the people round there to adopt the Nyamwesi tribal marks, and before he allows Bihé people to settle there he makes them do likewise.

Ukalaganza is about 360 miles from the east coast, and people belonging to Msiri trade to Benguella. It shows how much tribes and nations are mixed up at the present day. At one place I saw a different kind of dress; the women wore what looked like bolsters round their necks—something like John the Baptist's head in a charger. There was one curious thing in Bailunda, the women were beating their corn with a sort of mallet on a piece of granite. Although so close to the coast, I found marks of that horrible slave traffic still desolating the fairest portion of the globe. I don't know whether what I have said is according to the ideas of the Anthropological Society, but I have done my best. It is very difficult for me to speak or lecture upon a subject in which I am not well up.

There are two things Colonel Fox wants me to speak about. In nearly all countries stone implements have been found, but I have never seen anything which can be fairly called a stone age; the only thing I have seen in stone would explode the theory. At Cairo I saw Mr. Dixon's brothers exploring the great Pyramids. I believe they lodged what they found in the British Museum. One of them was a copper boathook, the other was a round piece of stone, which Mr. Dixon supposed to be the weights with which the women weighed out the lentils.

. At very many places I saw many of those stones where they had no knowledge at all of weights and measures. What were

they? They use in many parts a stone for grinding their corn, and they run in the hollows, and don't work properly. The slabs are chipped with small stones, which in time become perfectly round like small cannon balls. Another curious thing is the corrugated blade, which Colonel Fox can tell you more about than I can. I have found this form all over Africa. I asked how it was done, and they told me they got it on the anvil and tapped it and turned it over; I could not find out more than that. I said, "You have this sort of arrow." They told me that that was only used for short distances, and the other a long way. This was simply a sort of rifled arrow which shoots true at long distances.

DISCUSSION.

THE PRESIDENT: All anthropological questions ought to be considered under two heads—Race and Culture—and Mr. Cameron has given us some information as to both. The African race is one of the greatest possible interest to anthropologists on account of its being probably one of the most ancient in regard to its continued occupation of that continent. Europe has been subject to great geological changes in comparatively recent times, and we are able to trace man back as far as the glacial period, but we have no evidence of man in Northern Europe earlier than that. Africa is the oldest continent in the world, having been above the sea ever since the Jurassic period, and, since it was first peopled by man, there have been no geological changes which could have driven him from it. Our traditions lead us to believe that the human race has spread from some region eastward of the Caucasus, and, in so far as the higher races of mankind are concerned, we have evidence that such may actually have been the case, but with respect to the black races we have no such evidence: indeed, all that we have goes to prove that this cannot have been the case with them. We cannot get over this fact, that the black races of mankind, although now separated from each other by wide and deep seas, nevertheless occupy one continuous area, and one of the most important communications which has been made to anthropology of late years was made by Professor Huxley when he was President of one of the parent societies of this Institute, who showed that in India and Africa these black races must formerly have been separated from the races on the north by seas which occupied the valleys of the Sahara and the Ganges. The countries now occupied by the various black races are also allied in their fauna, and there is evidence to show that those connections cannot have taken place by existing land, but by some continent which is now submerged. There is therefore every reason to suppose that the present separation both of man and animals in this region is owing to geological changes. But there is another race of which Lieutenant Cameron has told us something, viz., the Malay race. We learn from geologists that the channel

which separates Madagascar from Africa is one of great geological antiquity. We know that the fauna of Madagascar and of Africa are quite distinct; that the fauna of Madagascar is to a great extent akin to that of the Asiatic islands, which shows that in all probability some land connection must have existed in former times; we know also that the inhabitants of Madagascar are of Malay origin, and we are very much tempted to infer from this that in the case of both, the connection may also have been owing to some former land connection, and that their separation at the present time may have been attributable to subsidence. Against that however there is this to be said; the way in which we identify the race of Madagascar with the races of the Asiatic islands is by means of their language, and if this connection has been owing to the former existence of land between those countries, it would follow that language in the two regions must have retained its identity during long periods of geological change and geographical separation, which is contrary to all we know of the persistence of language, and of the length of time necessary for geological changes to be brought about. Whilst, then, there is evidence to show that the present distribution of the black races is owing to former geographical connection, that of the Malay race must be attributed to emigration, and I think it is in favour of this supposition that Mr. Cameron should now tell us that the Malay race has passed its ancient boundary of the Mozambique Channel and is found to exist in considerable numbers on the African continent. This, if it is borne out by subsequent inquiries, will be a new point in ethnological observation. With regard to culture, Mr. Cameron has told us that he has seen no evidence at all of stone implements in his journey; but if any traveller had walked across England during the Saxon period would he have discovered the existence of stone implements in this country? I think not, because they were buried beneath the soil, and it is only recently, by means of railway cuttings, agriculture, and engineering operations, that we discovered that a stone age existed in this country. We know that stone has been used in many parts of Africa, at the Cape, on the shores of the Bight of Benin, and in Egypt, and only at the last meeting of the Society we had a communication from Mr. Hyde Clarke which, if confirmed by subsequent inquiry, I regard as a most important one, by which he has shown that in other parts of Africa the former existence of stone implements may be traced in the language, the words for "axe," "stone," and "knife" being the same in many parts of Africa where the stone implements themselves have not yet been discovered. With respect to the iron-work of Africa, Mr. Cameron has also given us, by means of these diagrams, some very important information, for he has shown us that the mode of working iron is the same over the whole continent, and that the forms produced in iron are identical. If you look at that bell (fig. 1, plate 1), there cannot be the slightest doubt that it is the same bell as the one which I now exhibit, and which comes from Gaboon. Look at the form of this sword from the Gaboon

and that shown in fig. 2, from Mr. Cameron's illustrations. Certainly the same forms of sword might be found in different countries, but not of so peculiar a nature unless the form had been communicated. We have also this wooden drum from the Gaboon. If you compare that with fig. 3, plate 1, of Mr. Cameron's illustrations, there can be no doubt that these forms are so identical as to afford proof of connection. The wooden shield shown in fig. 4, plate 1, also appears to me the same as those used by the Kanemboos, which are described by Denham and Clapperton as being in the form of a Gothic arch, and illustrated in that work. I cannot doubt that this, like many other forms of tools and implements, has spread from a common source. In conclusion, I would only revert to what I said, in my remarks at the commencement of this meeting, that I hope when Lieutenant Cameron goes to Africa again, or his successors, the Anthropological Institute will be in a position to afford him or them more assistance than on the present occasion. It is quite right that geography should take the lead, and anthropology should follow afterwards, but anthropology cannot afford to be far behind. When once these races are brought into contact with European civilisation their habits change so rapidly that the opportunity is soon lost of observing them in their pristine condition. In Tasmania the aborigines have passed away without our obtaining any satisfactory information about them; in Polynesia and other places the same thing is going on. The English race has done more than any other to destroy all these races and obliterate their culture. As a nation we are bound to keep some scientific record of that which we destroy. The Anthropological Society of Paris has lately received 21,000 francs from the city of Paris to assist in prosecuting similar researches. We ought to do what we can, when sending out expeditions, to secure ample means for carrying on anthropological research. In this respect we are certainly behind the French. A French expedition has lately started from the west coast with the express object of solving anthropological problems. I think it is most important that we should form a strong Anthropological Society for the purpose of carrying out original anthropological research; and when the time comes when we shall be able to do this, we shall, I am sure, find no one into whose hands we could commit our investigation with more confidence than Lieutenant Cameron, to whom other branches of science are so much indebted, through his courage and perseverance, and whom we have now to thank for a most interesting and instructive communication.

The Duke of ARGYLL: As I am only a stranger here to-night, I feel it almost a liberty to make any observations. Perhaps I may be allowed to ask a question of very great interest, and that is, whether Lieutenant Cameron has made any observations of lake dwellings in Africa, especially as I see drawings of lake dwellings?

Mr. CHARLESWORTH: There is one point respecting which I feel a great deal of curiosity—I refer to that remarkable instance of ornamentation, or perhaps we should claim to call it disfigurement,

of the human form, the case of the stone hook through the upper lip, which I must confess greatly puzzled me to understand. We are all aware that rings are worn through the lobe of the ear, through the cartilages of the nose, or transversely through the upper lip, but, if I understand it rightly, it was an aperture of an inch or $1\frac{1}{2}$ inch in the upper lip and the stone put through that aperture so as to resemble a duck's bill. How was the stone held in position? We, as anthropologists, hold the name of Burton in the highest esteem, and therefore it is a matter of pride to the members of this Society to hear what Lieutenant Cameron tells us, that in those portions of Africa through which he wandered where Burton had been, he found nothing to contradict. If I may ask one more question, it would be this: In going through this vast tract, how was the matter of interpretation managed? Did he from time to time get a fresh batch of interpreters, or did the same carry him all the way across the Continent of Africa?

MR. CHARLES HAMILTON: Having travelled a good deal in Angola, I am delighted to hear the way in which Lieutenant Cameron has spoken of the slave trade. When our learned ex-President, Professor Busk, was in the chair, I had one evening a paper read for me in which I spoke of the atrocities of the Portuguese and traders, and I am only too delighted to find a man who comes forward and tells me that the Portuguese are cruel slave traders. There are two great slaveholders, the Khedive of Egypt and the King of Portugal, but by great plausibility and knowledge of language these things are perpetrated. I saw in the interior of the country—not within the reach of our consuls, because a more glorious consul than Consul Hartley could not be, a more kind consul we could not have—I saw the most atrocious slave trading going on, and so strong were my remarks on it that publishers in London were afraid to publish my book. It is a very great anthropological subject, the subject of cruelty to our fellow beings, therefore I hope our learned President will pardon me for intruding.

SIR JOHN LUBBOCK: The paper raises a great number of questions. I should like to ask Lieutenant Cameron, in replying, to give us a little information as to the different forms of arrow-heads. It is of very great interest. We can hardly doubt, of course, that those different shapes have a meaning; either they imply differences of race or differences of purpose. In that case we should all be glad of some information on the subject. As regards the use of stone implements, I confirm what you have stated; the use of stone was no doubt forgotten in that district of Africa. I have no doubt that the central districts of Africa must have passed through a stone period. I hoped he would not quite commit himself as to the recentness of the objects which Mr. Dixon found in the Pyramid. I quite believe that the round weight was probably not used as a measure, I am disposed to think it was an ancient weight. It was found in that part of the Pyramid which would seem to imply it was coeval to that structure. In these times of depression of the

iron trade we are all glad to hear of one place in the world where that trade is in so flourishing a condition.

Consul HARTLEY: I was five years in the district from which Lieutenant Cameron has arrived. I left some years ago. I can only say that everything Lieutenant Cameron has stated is in accordance with my experience in a long residence in that country. Since that time there has been a consul who is present here. He resided there for three years. I have travelled a great deal through Africa, from the Cape to the Portuguese position, and partly through the country Lieutenant Cameron passed through. I have never seen anything different from what he stated. Those spear-heads I found in different parts of the interior, and I suppose from latitude 22 degrees upwards as far as the Portuguese position, I found the same thing.

Consul HOPKINS: I hardly expected to have to say anything. What Lieutenant Cameron has stated about the manners and peculiarities of Africa may seem strange to English ears: believe me if we were to tell half the tales of what we do see it would not be believed. Mr. Hamilton will bear me out in that. I am happy to say, with reference to what Mr. Hamilton has said, that the 30th April of this present year was the last day on which slavery was allowed to exist in Portugal or its colonies. I left Angola on the 30th of March, and a month after that day every man was free. What the result may be we do not know, but we anticipate great good to the Africans.

Lieutenant CAMERON: The only place where I saw lake dwellings in any number was on that lake—Lake Mohrya. The dwellings are built on piles on a platform sufficiently solid to allow people to pound corn upon them. Their canoes are kept between piles, on large raised platforms. The principal reason of their dwelling out like that is to protect them from the attacks of the chief of Urua. One other place was a sort of fishing village close to the Tanganyika, but those were simply for being ready for going out fishing at night. They had another village behind, higher up. The next question was about the lip-stones. The hole is formed gradually until it gets larger; the stone is increased in size from time to time, and the lip gradually gets larger. The same sort of thing is seen in the Crystal Palace. In a representation of one of the tribes there, a stone is in the lower lip, which is far more inconvenient. With respect to interpretation: all the region south of the Congo is one vast family of languages, of which the grammar is the same. The Arabs served me as interpreters. One of my men talked Portuguese. In fact the one language of Kiswahili, which I understood, carried me through from east to west. With regard to the different forms of arrow-heads, I cannot pick out exactly the localities of some of the forms. They nearly all seem to be made at the sweet will and fancy of the man who made them. They all came out of a district fifty or sixty miles wide. I don't know their different uses. Some of the broad ones are for shooting birds, the larger ones for war.

THE PRESIDENT: I am very much in favour of Mr. Cameron's opinion, that they are shapes of pure fancy, and that, like other forms of weapons produced by savages in other parts of the world, they arise from a love of variety on the part of the fabricator, rather than from any pre-conceived design of utility. This is shown by putting a number of the forms together according to their affinities, as has been done by Capt. Dillon in arranging the diagram of them for Lieut. Cameron. By this means it is shown that the differences are produced by the development of some parts and the suppression of others, whilst some of the forms in this case appear to be made in imitation of the axe blades used in this region. No doubt some of the forms arising in this way, when found useful for any special purpose, would be retained, some in one place and some in another. I think, with Sir John Lubbock, that the subject is of interest as illustrating the working of the minds of savages in relation to such matters. In drawing to a close the proceedings of the evening, I have only to add, that, unfortunately, the means we have of doing honour to distinguished travellers like Mr. Cameron are not very great; we have no gold medal, or other such distinction to confer on him, but we have done our best to mark our sense of the services which he has rendered to anthropological science, by electing him an honorary member of the Institute.

The following paper was taken as read:—

On the SCAPHOID SKULL of a POLE. By Dr. ISIDOR KOPERNICKI, of Cracow.

THE Anatomical Museum of the University of Cracow has possessed for fifteen years a very remarkable scaphoid skull, about which Mr. Kozubowski, formerly Professor of Anatomy, now *Emeritus*, has been able to give me only the following account:—That the cranium belonged to an adult man, a carpenter, born at Cracow, and that the deformation of his head dated from infancy, during which he suffered for a long time from an extensive eruption upon the hairy scalp. The profile of this cranium is most characteristic. It greatly resembles that of the scaphoid skull of the Biegnese boy described by Professor Calori,* and also that of the Australian skull represented by Dr. Barnard Davis.† Seen *on this side* the calvarium has the form of a long ovoid a little bent downwards upon its axis. Its frontal extremity is slightly truncated, whilst its opposite extremity is considerably acuminate. This calvarium,

* "*Sopra un Cranio Scafoideo. Lettera all' ill.*" Dr. J. Bernardo Davis. Bologna, 1871, Tav. I.

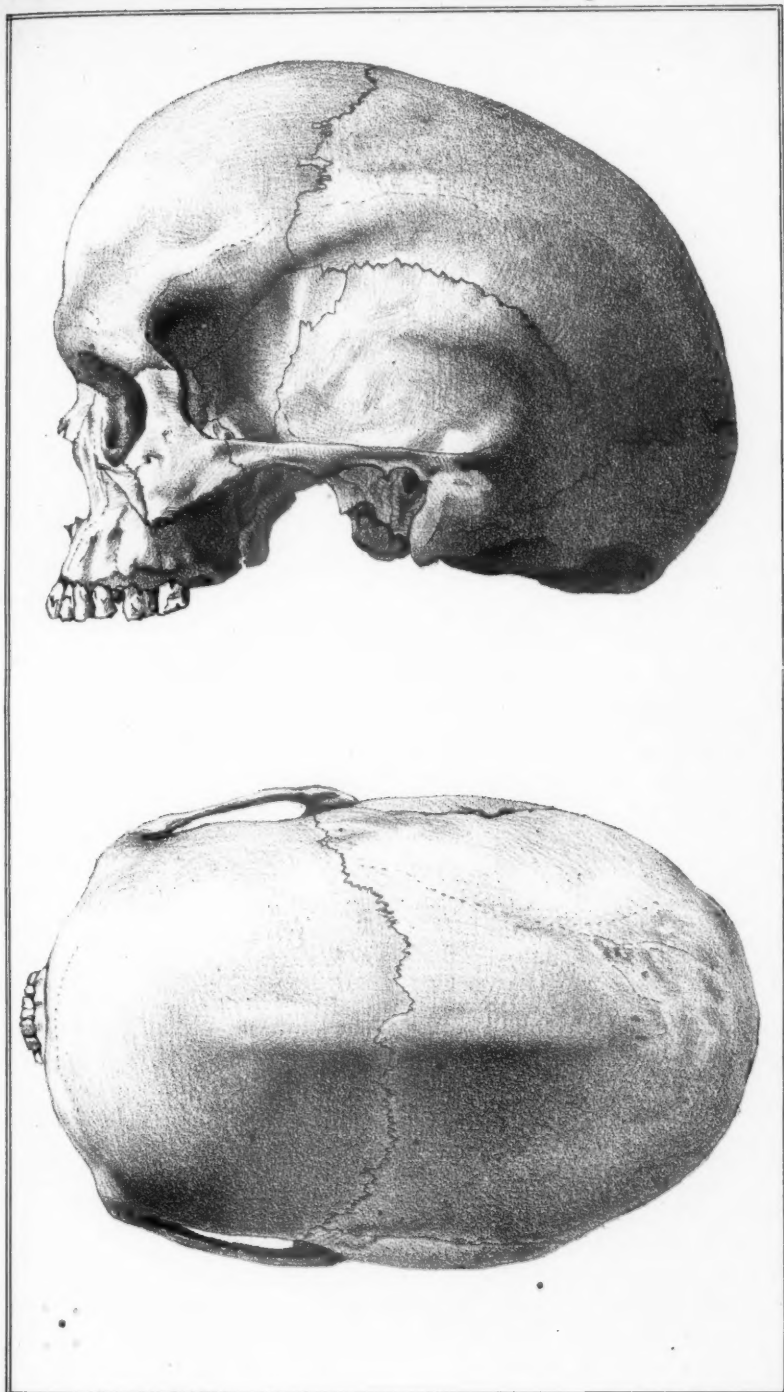
† "*On Synostotic Crania among Aboriginal Races of Man.*" Haarlem, 1868. Pl. I.

which is very oblique from before backwards, reposes at its anterior portion upon the facial skeleton, so little developed and so shortened that the superior maxillary teeth are found on a level, a little more elevated than that of the surface of the *receptaculum cerebelli*.

To set out from the glabella, which advances considerably above the face, the forehead rises vertically in an arc full and perfectly spherical. Having arrived at from two to three centimetres before the coronal suture, this arc bends somewhat suddenly downwards and backwards to form the bregmatic line, which is long, oblique, and feebly convex, and is then confounded with that of the very prominent occiput, bent downwards. The contour of the *receptaculum cerebelli* is very long, flattened, and slightly oblique from behind forwards.

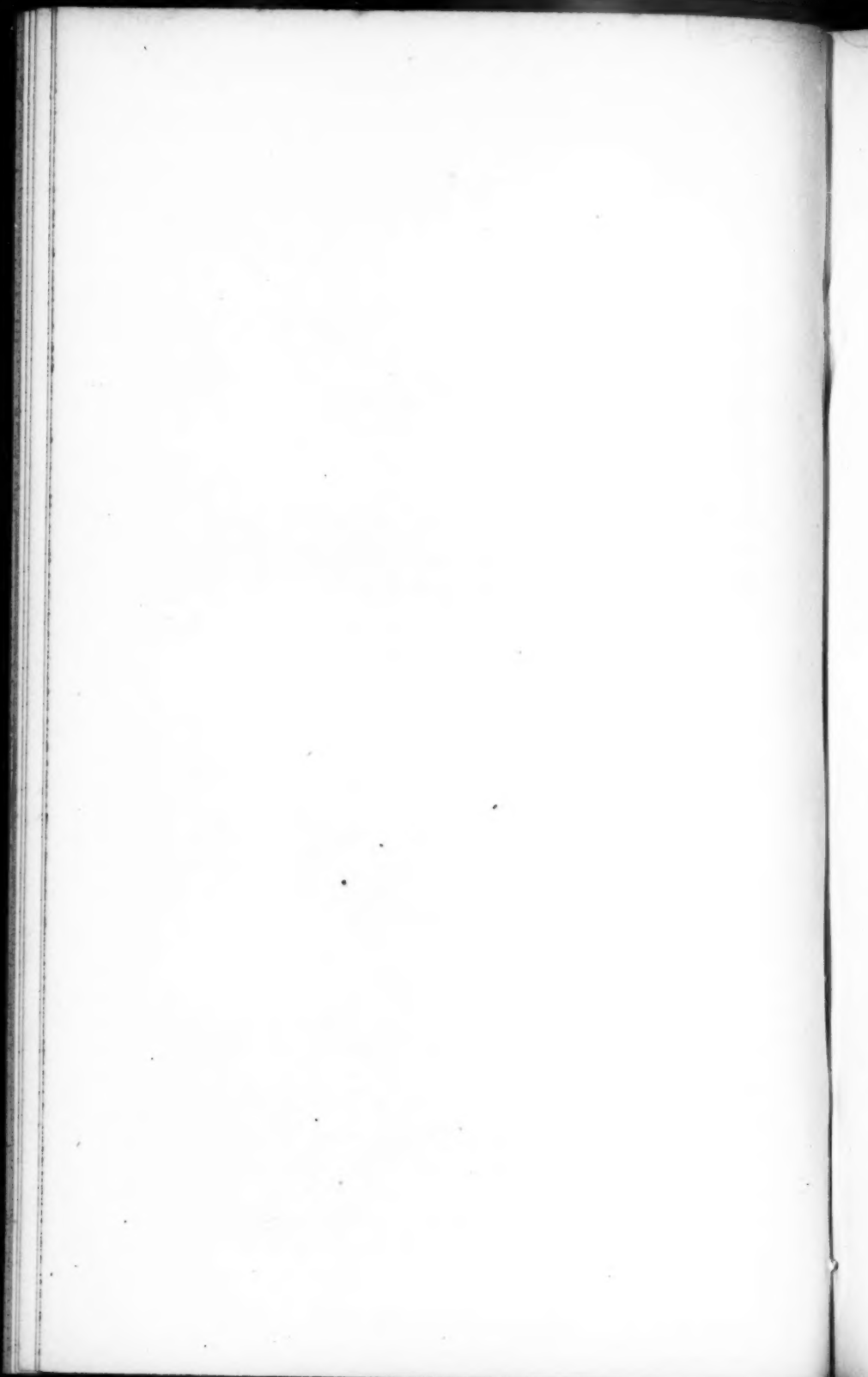
The facial skeleton, seen on the side, is delicate and very small in proportion to the calvarium. The superior maxillary is planted vertically beneath the sinciput, and its alveolar process alone projects slightly obliquely. *Seen from above (norma verticalis)* this cranium presents a very elongated oval, slightly asymmetrical. This asymmetry is caused by the more considerable convexity of the right temporal. The alisphenoids are narrower than ordinary, and very much sunk, which augments the depth of the temporal fossæ, from which fact the contour of the skull, when seen from above, appears as if it were contracted in this region. In our orthographic figure of this contour the frontal extremity is more obtuse than the occipital, and allows the incisor teeth, with their alveoli, to be seen before. Yet these are not perceived *de visu* in examining the cranium from above; the general form and the contour of this cranium then appears to us perfectly similar to that of the scaphoid skull of the Biegnèse, with this only difference, that in our cranium the zygomatic arches project a little beyond the sides of the outline.

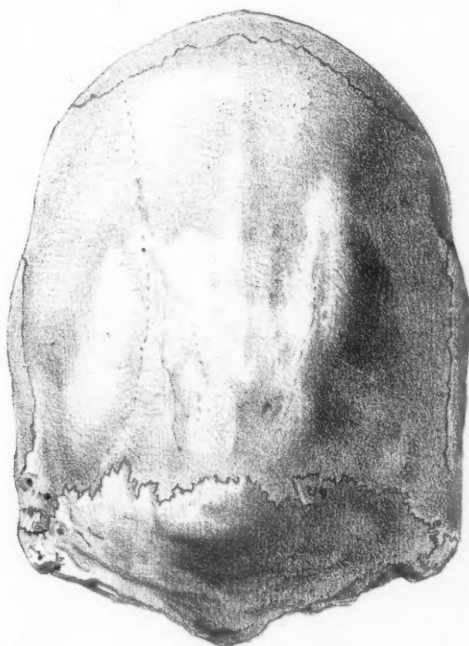
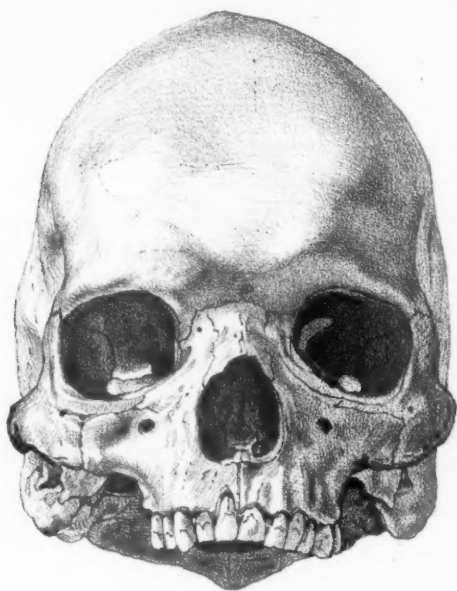
Seen in the front (N. frontalis), and still more *seen from behind (N. occipitalis)*, our cranium presents in a high degree the characteristic ogival contour. The forehead is straight and beautifully prominent; the occiput, on the contrary, is pointed and depressed downwards. Under whatever aspect, we do not perceive the least trace of the parietal bosses. The most striking character in this cranium, which is common to all the scaphoid skulls, is its extreme narrowness, accompanied with enormous elongation, and the acute *keeled* form of the cranial vault. The keel commences immediately behind the middle of the coronal suture, and forming a ridge more and more acute, extends backwards all along the entirely obliterated sagittal suture, and is prolonged over the summit of the occipital scale. It disappears



C.F. Kell, Lith. London. E.C.

SCAPHOID SKULL OF A POLE.





C.F. Kell, Lith. London. E.C.

SCAPHOID SKULL OF A POLE.

anteriorly on the very convex surface of the frontal, on the sides it passes immediately over the very inclined surfaces of the parietals, and behind it forms by degrees into the prominence of the occipital boss.

The temporal semicircular lines ascend very high towards the summit of the cranial vault. They are removed diametrically from one another to the extent of 94 mm., $3\frac{3}{4}$ inches, at the point at which they cross the coronal suture they approach more and more, so that towards the middle of the parietal region the distance between these two lines is reduced to 51 mm., 2.1 inches, and before the lambdoid suture it is only 36 mm., $1\frac{1}{2}$ inch.

These temporal lines divide the surface of the cranial box into three distinct areas, the two lateral occupied by the attachments of the temporal muscles, and the median one limited by these last. The surface of the lateral areas is altogether smooth, slightly grooved by the ramifications of the deep temporal artery, and by striæ due to muscular attachments. The surface of the median area, on the contrary, has a more or less rugous aspect. This rugosity, very slight upon the frontal bone and the anterior third of the parietals, increases in extent and intensity, and attains its maximum in the posterior third of the median area. It is owing to a multitude of very small hyperostotic exuberant buds scattered over the osseous surface. In the intervals of these buds is perceived a multitude of little mouths, by which the arterioles of the periosteum penetrated into the bony texture. These mouths or pores being more abundant and larger in the posterior third of the median area, give the surface a quasi-spongy aspect. The *foramina parietalia* are not met with in their usual places—that of the right side is marked by a little alveole hollowed in the osseous substance not far from the lambdoidal margin of the parietal.

In examining the surface of this median area more attentively by means of the lens, we remark upon the median line an osseous ray perfectly smooth, 3 to 5 mm. wide, and prominent in a sort of ridge formed by the very compact osseous tissue, in which the arterial canaliculæ are not to be perceived. Afterwards on the two sides of this ridge, immediately near it, we perceive a multitude of very small orifices, which are not circular but always elliptical, the longitudinal axis of which, being always directed from within outwards, which proves that the arterioles which penetrated them had the same direction from the median line towards the centres of the parietal bones. Along the median ridge we nevertheless perceive two places where its smooth surface is divided by a little longitudinal furrow, scattered with small pores perfectly circular, by

which, consequently, arterioles penetrated vertically, which proves that the sagittal suture primarily existed in its full function.

In brief, having analysed all these details, we arrive at the conviction that the parietal bones in our scaphoid cranium were developed in a legitimate manner, beginning by two distinct centres of ossification for each bone, but that their ossification along the sagittal suture and over that suture itself, was accomplished more vigorously and more rapidly than in normal crania. The temporal semicircular lines themselves do not present anything particular in their anterior portion, but on arriving at the middle of the parietal bones, they are transformed gradually into two broad, rough lines, very prominent above the neighbouring surface of the parietals, and which have all the characters of an hyperostosis produced by a chronic periostosis. Between these last projections and the median ridge there exist two slight longitudinal impressions of the cranial surface, which emerge gradually before and behind, to lose themselves in the rugous surface which has been mentioned above. The state of the sutures in this cranium may be thus described: the *coronal* is only obliterated to the extent of a centimetre, setting out from the alisphenoids, of which it touches the upper edge nearly in the middle; in the rest of its course this suture is perfectly free, and richly dentelated to its centre. The *sagittal* suture is, as has been described, completely obliterated, and replaced by a hyperostotic ridge. The *lambdoidal* suture is obliterated at the top of the lambda to an extent of four centimetres; further on, up to its junction with the mastoid, it is entirely free. The *scaly* suture of the temporals is open; the *mastoid* on each side is, on the contrary, completely obliterated in its junctions with the parietal and occipital bones. The sutures of the *alisphenoids* and the *intra-orbitary* sutures are open.

Lastly, by examining the interior of the cranial cavity we find that the obliteration of certain sutures was there more energetic and more prompt than on the exterior. Thus there is no trace of the coronal suture, whilst the lambdoid is open in all its extent down to the mastoids.

As to what concerns the different osteological details of this cranium it may be remarked: the moderate frontal sinuses, the wide forehead, straight and very prominent, the deep temporal fossæ, the long and very convex scales of the temporals, especially the right, the mastoid processes broad at their bases are short and pointed, the venous foramina, mastoid and condyloid, of the right side are enormous, and those of the left side likewise are tolerably large; the occipital tuberosity, its

semicircular lines, and the occipital crest, are very prominent, the occipital foramen is enormous, and of an oval form.

The facial skeleton, of a very slender and fine conformation, offers the following details: the orbits are moderately wide, quadrangular, horizontal, are separated by a pretty broad partition; the root of the nose is sufficiently deeply depressed, the nasal bones are short and completely grown together in their upper half, the nasal aperture is wide, heart-shaped, with the inferior notch blunted, the funnel-shaped openings into the nostrils, on the contrary, are very small; the slightly developed cheek-bones are depressed backwards; the zygomatic arches are long, fine, and scarcely bent. The alveolar process projects forwards, its border is long and elliptical; the teeth are white and sound; the lower jaw wanting. The mensuration of the cranium is given in the following figures in millimetres; and in order to facilitate comparison, the analogous measures of other scaphoid skulls, of the Biegnese (B) described by Prof. Calori, and of the Australian (A) described by Dr. Barnard Davis.

A. Calvarium.

Internal capacity		1350 c.c. (B 1646, A 1450)
Length		203 mm. (B 208, A 210)
Naso-basillary line		93 (B 93)
Width.	Inferior frontal	104 (B 97)
	Maximum	107 (A 112)
	Bitemporal	113 (B 116)
	Bisquamous	119 (at the middle of the suture)
	Maximum	128 (B 126, A 121)
	Occipital	113 (B 118, A 107)
	Bimastoid	101 (B 108)
	Height	130 (B 139, A 134)
Auro-frontal (Carus)		132 (A 130)
Occipital (Carus)		108 (A 107)

Oblique diameters.—From the anterior edge of the occipital foramen to

glabella	107
frontal boss	122
coronal suture	130
lambdoid	114
occipital boss	108
point of nasals	91
nasal spine	84
alveolus	87

Vertical arch.

Frontal	150	(B 142, A 143)
Parietal	155	(B 158, A 149)
Occipital superior . . .	55	(B 773, } A 133)
Occipital inferior . . .	52	(B 50, }
Total	412	(B 427 A 423)

Circumference.

Preauricular	290	
Postauricular	240	
Total	530	(B 554, A 553)
Transverse arch	260	(B 309, A 310)
Occipital	220	

Occipital foramen.

Length	38	(B 38)
Breadth	31	(B 32)

Width.

B. FACE.

Biorbital	101	
Zygomatic	131	(B 121, A 130)
Bimalar	108	

Nose.

Length of nasals	20	
Nasal opening { length,	32	
breadth,	27	

Orbits.

Height	31	(B 34)
Width	31	(B 36)
Width of partition . . .	22	(B 27)

Superior Maxillary.

Total height	60	(B 56)
Height of alveolus . . .	18	
Greatest width	95	
Width of body	65	
Do. at alveolar border . .	61	
Palate, length	45	
Do. width	34	

The analysis of these figures teaches us what follows: notwithstanding the extraordinary elongation of this cranium, caused by its extreme flatness on the sides, it has gained nothing either in volume or capacity, since its horizontal circumference measures 530 mm., and its internal capacity is 1350 c.c., measures which range it among very moderately developed skulls. In comparing these measures with those of Polish crania, measured by myself and by Dr. Weisbach, we find that our sca-

phocephalic skull exceeds only by 19 mm. in circumference, and yields by 167 c.c. in capacity to the normal Polish cranium.

The essential point in the particular conformation of our skull is evidently seated in its extraordinary elongation at the expense of its width, and in the numerous proportional deviations which result from it. Thus with 203 mm. in length of the skull, its greatest breadth only measures 128 mm., which gives it a *cephalic index* = $\cdot 63$, that is to say, a little greater than the scaphoid cranium of the Biegnese ($\cdot 61$) and more than a fourth below that of the normal Polish skull. As to what concerns the other breadth-diameters, in particular they are the occipital and the bimastoid, which yield 11 to 8 mm. to those of the normal Polish skull, whilst the frontal and temporal diameters are, on the contrary, from 8 to 2 mm. greater; all these results in the scaphoid cranium are perfectly in agreement with the precocious obliteration of the sagittal and mastoid sutures, and with the integrity of the coronal and alisphenoid sutures.

In comparing the circumferences of the pre- and post-auricular parts of this cranium, we find that the first exceeds the last (290 mm. : 240 mm. = $1\cdot 2 : 1$) much more than in the mean Polish skull ($1\cdot 03 : 1$). This predominance of the pre-auricular region is confirmed by comparing the auro-frontal (132 mm.) and the auro-occipital (108 mm.) diameters, where the relation is almost identical with that observed by Calori in the scaphoid cranium of the Biegnese. The comparison of the measures of the three constituent portions of the cranial vault teaches: that the extreme elongation of our scaphoid skull is owing principally to the development of the parietal bones in length. For whilst in normal Polish skulls the parietal arch is $= 0\cdot 33$ of the whole vertical arch, in our scaphoid cranium this relation $= 0\cdot 376$, the same for the chord in the first is $= 0\cdot 62$ of the antero-posterior diameters were, being $= 152$ mm. it is $= 0\cdot 748$ of it.

Taking into consideration the two following circumstances: 1. That the maximum breadth of our scaphoid skull is found below the squamous sutures, nearly in the centres of the squamæ of the temporals, whilst in normal crania it sometimes falls in the middle of these sutures; sometimes a little higher upon the parietals. 2. That the relation of the inferior frontal diameter ($= 0\cdot 81$) and the occipital ($= 0\cdot 88$), in proportion to the diameter of greatest breadth has only sunk but very little in comparison with what takes place in normal Polish skulls (frontal $= 0\cdot 67$, occipital $= 0\cdot 86$).

This proves that in consequence of the precocious oblite-

ration of the sagittal suture, in proportion as the cranium is elongated forwards and backwards, its contraction is limited principally to the superior part of the cranial vault, whilst the breadth of the skull, nearer to the base, remains nearly stationary.

As to what concerns the base of the cranium, taking into consideration the very small absolute length (93 mm.), as well as the remarkable narrowness of the alisphenoids, we have every reason to suppose that its basilar sutures would have been closed before the longitudinal development of the vault has been completed. And this has brought about the shortening of the base itself, the approach of the posterior nasal spine to the anterior edge of the *foramen magnum*, and lastly, the curvature of the cranial vault downwards.

The study of the *craniographical profile* makes us acquainted with many instructive details of the singular conformation of scaphoid skulls. Thus: the basilar line makes an angle extremely open with the plane of the occipital foramen (177°), whilst in normal crania in general, it very rarely attains to 170° , and the maximum of its opening (found in a Russian skull from Penza) known to us is 174° .

The relative position of the occipital foramen, *index foram. magni*, in our scaphoid skull, is $=0.50$, that is to say, that it is the maximum found by Professor J. Wyman in crania of the white race, and in those of the human race in general. The frontal segment being a little more inclined to the basilar line (75°), that is recompensed by the strong convexity of the frontal curve, the index of which (0.27) surpasses by 0.05 that of normal crania in general. The extraordinarily long parietal segment (152 mm.) and also flat (index of its convexity $=0.12!$), forms with the preceding nearly a right angle, which, as far as I know, is never observed in normal crania. The same case exists for the degree of the inclination of this segment to the occipital, which is $=72^\circ$, that is to say, forming an angle of 10° less open than the smallest observed by us upon a Lapp skull (82°).

Lastly, as to the facial skeleton of this scaphoid cranium, we have only two prominent characters which distinguish it *de visu*; these are the slenderness of the face and its orthognathism. But it is the first only which distinguishes it from the normal Polish skull, for the height of its superior maxillary being $=60$ mm., that is to say, 10 mm. smaller than that of normal Polish skulls, only makes 0.29 of the length of the cranium, whilst in the last it is $=0.39$. And as to the opening of the facial angle of Cowper ($=87^\circ$) it exceeds rather considerably that of the normal Polish skull ($=83^\circ$).

After all that has been reported concerning the conformation of our scaphoid skull, we may range it among the best specimens known of this kind of crania. Far from attaining to the extraordinary degree of deformation of the celebrated skull of the Stettin weaver described by Schade, and much better represented by Dr. Barnard Davis ("Synostotic Crania among Aboriginal Races," plates ix. to xi.), it much more resembles the scaphoid skull of the Australian, of the tribe of the McLeay river, described by the last author (*ibid.*, plates i., iii.), and still more the scaphoid skull of the Biegnese, described by Prof. Calori (*op. cit.* Tav. i.—iv.). It is nevertheless distinguished from the Australian skull by its more moderate lateral compression, by the almost complete absence of the *foramina parietalia*, by the persistence of the squamous sutures of the temporals, and especially by the delicacy of its facial skeleton. The characters which distinguish it from the Biegnese cranium are the prominence of the incisor teeth, and of the zygomatic arches outside the contour of the skull in the *N. verticalis*, which nevertheless are hidden by sinking the frontal end of the skull a little, the integrity of the lambdoid suture in the interior of the cranium, the great extent of the area of the temporal muscle, and lastly, the considerable development of all the external prominences of the occipital—crest, tuberosity, and semicircular ridges. Apart from these secondary differences, the essential in the conformation of our scaphoid skull agrees perfectly with that of the cited crania, and confirms the capital facts concerning the origin and the anatomical conditions of scaphocephaly.

1. That this deformation is owing to the synostosis of the two parietals, distinct in their origin,* and that nothing, on the contrary, authorises the admission of its supposed origin from a single medium centre of ossification common to the two bones.

* In support of this opinion I ought to state a very eloquent fact which has come to my knowledge very recently, thanks to the obliging indication of Professor Kozubowski. It relates to a *microcephalic* cranium of a fetus at the full period found in the Anatomical Museum, which was collected by the late Professor Bierkowski. Very remarkable under many other respects (absence of the frontal suture, the fontanelles, of inter-maxillary bones, and of nasal bones), this little cranium is distinguished by the *scaphoid*, or, rather, *cuneiform* form of its calvarium. This form is owing to the very precocious obliteration of the posterior half of the sagittal suture, and of all the right side of the coronal suture. Notwithstanding the complete absence of the parietal bosses, the persistence of the sagittal suture in all the anterior half of the *carina*, the radiated aspect of the internal surface of the parietal bones, with two centres of these rays, distinct for each bone, does not leave any doubt of the primordial existence of two parietals with their distinct centres of ossification.

2. That the lateral compression of the cranial vault caused by this synostosis, limiting itself in preference to the superior and middle of this vault, is compensated for by the considerable development of the sinciput forwards and across, as well as of the occiput backwards and downwards.

3. That the more precocious ossification of the basilar sutures, by preventing the development in length of the vertebral centres of the cranial segments, and by augmenting the degree of their mutual inclination, plays a very important part in the production of scaphocephalism, and this is by bending downwards the occipital segment, after the mechanism analogous to that which was demonstrated by Prof. Ecker for normal crania of different races ("Archiv für Anthropologie," T. iv., 1871, p. 301, *et passim*. *Ueber die Krümmung des Schädelrohres*).

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Louis A. Lucas.

C.F. Kell, Lith. London, E.C.

NATIVES OF SUAKIN, AFRICA.

ANTHROPOLOGICAL MISCELLANEA.

The following is an extract from a letter received by the President from Mr. Louis Lucas, together with the accompanying short vocabulary of Bishareen words, and some sketches given on plate. No Bishareen vocabulary, it is believed, has been yet printed:—

KHARTOOM, 11th March, 1876.

DEAR COLONEL FOX,—A four months' delay in Cairo, waiting for my ammunition, made my arrival in Khartoom far later than I had originally intended. I hear from Colonel Gordon that he is unable to receive me at Judo, owing to the small number of porters at his disposal—being insufficient to comply with the wants of his own soldiers.

I shall now enter Central Africa by the Bahr el Gazelle district, following Dr. Schweinfurth's route to Munza's residence, and from there continue southerly until, at latitude 3° S., I shall strike south-westerly. By these means I shall hope somewhere to cross the waters of the Congo. If able, I shall follow it to its source, and retrace my steps to its mouth.

The Anthropological Queries you recommended to me I, already, have found to be of great value, and I sincerely hope to put them to some good use. It is scarcely worth while giving you any of my notes on anthropology at present, as the Bishareens and Hadendoas are so well known. Their modes of life are very different, likewise their customs. I also enclose a few rough sketches, traced from my sketchbook. It is worthy of remark that a Bishareen of the desert speaks always of a resident in Souakin as a Souakinese, and never as a Bishareen; although the life of the latter is purely nomadic; it seems curious that his town brother should be so distinguished. It is also to be noted in connection with my sketch of a Souakinese, that when I asked my subject to remain quiet and in an attitude of ease, he at once raised his left leg and rested it on the front part of the right knee. I never saw another of his tribe do the same, although I was among them three weeks. This is a favourite attitude of repose among some of the negro races of the southern parts of the White Nile—for example, the Shillooks. I believe the man had never been beyond Khartoom. Among the Souakinese especial pride is taken in the adornment of the hair. It is plastered with grease, and from frequent anointments, without the use of the comb or brush, it assumes a most uncouth, matted

appearance; or, as is often the case, it is dyed a reddish brown colour with henna, or is made white by the application of numerous dabs of white butter, or coloured yellow with a dye unknown to me. I have given specimens, in my sketches, of the above, besides one who kept his hair in an unkempt state. This style is more uncommon. The boys rarely, if ever, alter the natural colour, but shave the head in every conceivable manner. Usually a lock is left on one side or another, or on the scalp. The girls and women invariably wear it in thin, short plaits, parted down the centre, and pressed tightly down by oil, grease, and hand.

I was unable to use my photographic apparatus before my arrival here. Since then I have procured three or four views—men and country—which I think will be of interest, they are the first ever taken in Khartoom. My instruments are all, I am glad to say, in good working order. Before I leave Khartoom I shall send to the Royal Geographical Society the meteorological observations taken by my servant three times a day for the past month, since my stay here.

I shall ever be grateful to Dr. Hooker for having found me so valuable a servant as Arthur Freeman. He was under Dr. Hooker at Kew for two or three years, and will be the botanical collector and registrar of the meteorological instruments during our travels.

It may interest you to have a copy of some notes made at Jeddah, relative to information I received from a captain of a British merchant vessel, then in harbour, who had brought pilgrims from the Malay Archipelago for Mecca. I have every reason to believe my informant, and the British consul at Jeddah, at whose house I met him, tells me he is well known to him, and is a reliable man. These notes refer to four men with tails.

Captain T. Smith informs me he brought in his steamship, "Eastern Isle," four men with tails, two from Borneo and two from Sumatra. One only was made to undergo an examination by him. "The tail was about fourteen inches long, slightly covered with hair about a quarter to half an inch long. He did not observe if the man possessed any muscular control over it. The man seemed ashamed of his malformation. It was worn bound up. I understand from Captain Smith doubled back, so to say, on the spinal column. All the men were very hairy about the chest, though not particularly so about the face. One only wore whiskers, the others were barefaced. They were all well made and were about 5 feet 4 inches in height. They appeared to him to be intelligent, and were fond of using their tongues and being in company, and apparently had no impediment in their speech. The hallux was not observed to be opposable, and there was no noticeable disproportion of the humerus, radius, and ulna, with the femur, tibia, and fibula."

This is all I could obtain concerning these men. I should have seen them myself if they had not already left for Mecca, and would not return for a fortnight. I do not remember having heard of any human being having been seen in England with a well-developed caudal region.

COMPARISON OF BISHAREEN WORDS.

<i>English.</i>	<i>Bishareen.</i>	<i>English.</i>	<i>Bishareen.</i>
Father	Bábu	Sheep's Meat	To'órshé
Mother	Dátoo	Dog	Wayas
Brother	Lanook	Cat	Town
Sister	Tutwatook	Earth	Oash
Grandmother	Hotók	Sun	Tówee
Grandfather	Hobók	Moon	Totree
Aunt	Deratók	Star	Yiook
Uncle	Durók	Tree	Indee
Male Cousin	Orók	Bush	Oseeam
Female Cousin	To'oto	Sand	Debba
One	Gal	Water	Aeer
Two	Maloo	Sea	Omheraghermee
Three	Maice	Sheep	Toka
Four	Ferdik	Cow	Os'ha
Five	Ai	Camel	Oka
Six	Sarger	Head	Ogerma
Seven	Sarum	Body	Otak
Eight	Sermai	Eye	Agwat
Nine	Zerdik	Nose	Agenif
Ten	Tarme	Mouth	Oyuf
Eleven	Tamnagwee	Chin	Sherna
Twelve	Tamnamal	Hand	Wi
Thirteen	Tamnanaicee	Leg	Rugada
Fourteen	Tamnaferdik	Foot	Tadembé
Nineteen	Tamnazerdik	Arm	Ooáy
Twenty	Targou	Cloth (over body)	Walak
Twenty-one	Tagwag'gwal	Hair	Cham
Thirty	Maitoun	Salt	Méle
Forty	Ferdiktoun	Mountain	Órba
Fifty	Aitoun	Hill	Wóó'óu
Sixty	Saijertoun	River	Mala
One Hundred	Shilo	Box	Sandook
One Thousand	Taminsh	I	Anib
Ten Thousand	Not known	You (thou)	Barook
Bread	Hardee	He	Bareu
Meat	To'órshé	We	Aenda
Camel Meat	"	You	Hod'hi
Cow's Meat	"	They	Hinhin

In the foregoing I have given the following sounds to the vowels:—

- a (unaccented), as in banner.
- ā, as in way.
- á, as in father.
- īi or īy, as the "y" in fly.
- ō, as in go.
- ó, as the "au" in taught.
- ee, as long "e" as in bee.
- é, as the "i" in sit.

An " " between two letters signifies there is a slight interval or pause.

The "h" is very slightly aspirated.

Uncle and Aunt are Durok and Deratok, be they either sister or brother of father or mother.

The language, to the ear, sounds exceedingly hard. The words are disconnected and cold.

N.B.—I am uncertain if the termination of the eight words after Mother be with or without a "k"; the men would sometimes say with and sometimes without. In any case if there be one, it is but very slight.

LOUIS A. LUCAS.

Professor Sayce remarks, with regard to the vocabulary, that the Bishareen word for salt has been clearly borrowed from the Arabs, probably along with the article itself.

As for the Bishareen numerals from 6 to 9, they are plainly compounded of the numerals 5+1 (*sar-zer*), 6+2 (*sar-u-m[uloo]*), 6+4 (*ser-mai[ee]*), and 6+4 (*zerdik=ser+ferdik*). It would appear from this that *ser* meant "5;" perhaps it was an old word for "hand" or "thumb." The word given for "5," *ai*, may be the same as the word given for "hand," *wi*.

DESCRIPTION OF PLATE VIII.

A native of Suakin. His hair is matted on top, straight at the sides, and coloured with henna.

- a. Man's head, the hair on top frizzly and whitened, the sides twisted into rope-like curls, and plastered with butter.
- b. Man's head, frizzled, unparted and untouched.
- c. Boy's head, knobs naturally frizzled.
- d. Girl's head, in stiff plaits about $\frac{1}{2}$ -inch wide, 5 or 6 inches long, and well greased.

The males always wear, passed through the hair at the back of the head, a stick for scratching, as shown in the sketches.

A QUESTION ON ASSIMILATION AND ON THE EYES OF MONGOLIANS.

It has been remarked that the eyes of missionaries and travellers long resident in China, as well as their cast of countenance and expression, assimilates in some extent to the Chinese. It may also be observed that, whereas the Jews in each country differ in their expression and cast of countenance, so in Russia some of the Polish Jews, without intermixture of blood, show a conformity of appearance with Mongolians, far different from their western brethren. I have lately noticed that Chinese and Japanese residents and students in London exhibit a much less marked Mongolian expression, and that the eyes are less characteristic.

This is a subject worthy of enquiry, and it is therefore offered as a question for investigation by members of the Institute. There is this to be taken into account, that a child will acquire squinting and obliquity of vision from squinting nurses and associates. It is therefore possible for this feature of the eye to be modified by external associations and impressions. The colour of the iris can also be affected, as is well enough seen in the streets in the cold and snowy days of winter. It is possible that the ears may be modified by adaptation to the harsher or softer voices of nations and associates.

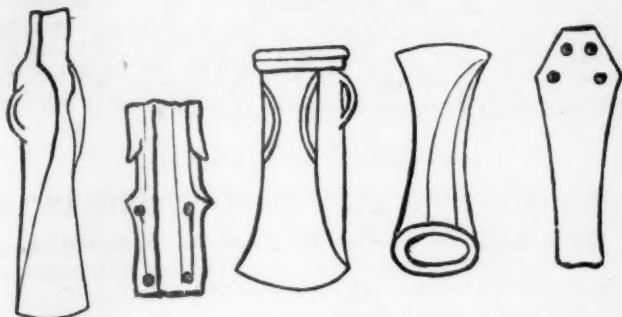
HYDE CLARKE.

**BRONZE CELTS FOUND NEAR CUMBERLOW,
BALDOCK, HERTS.**

(Communicated by E. F. BALLY, Esq.)

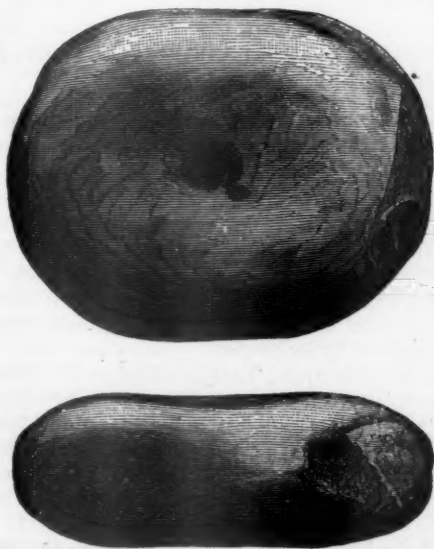
THE celts here shown are some of about forty which were lately (1876) found by some drainers working for Mr. Fossey of Cumberlow-green, Baldock, Herts. They were found in a neatly-made,

FIG. 1.



well-shaped hole about 2 feet in diameter, and at about $2\frac{1}{2}$ feet below the surface, in stiff, red loam. They lay at the bottom of

FIG. 2.



the hole with about 50 lbs. of metal, all of the same description, partially fused. They consist of five or six different shapes, and

there were reports of portions of pots having been found near, though none were seen. No other objects are known to have been found near this spot, close to which Ickman's-hill, on the old Roman road, is situated. Black earth has been found in the neighbourhood, which has led to the belief that a furnace existed close at hand. The bronzes, many of which are beautifully made, whilst others are much battered, are now in the possession of Adolphus Meetlike, Esq., of Julian's Park, Rushden, Huntingford, Herts, who is landlord, and lord of the manor.

The figure here shown (Fig. 2) is that of a wallong, or stone for grinding nardoo seed on the yowwi, a large flat stone. It is one of those (No. 10) presented to the Institute by Mr. Stanbridge, of Daylesford, Australia, and referred to at page 41 of the Journal, vol. vi.

OCURRENCE OF PLATYCNEMIC BONES IN THE ANCIENT BURIAL-GROUND AT KINTBURY.

By Prof. T. RUPERT JONES, F.R.S.

VISITING Newbury lately, I had the opportunity of seeing the ancient burial-ground at Kintbury, where human bones (referred to in various letters in the newspapers of late) have been found for some years during the process of digging away the chalk in the pit at the Whiting Factory, in the occupation of Mr. White. Mr. Walter Money, of Newbury, first drew attention to these ancient bones, having found several among some chalk that had been brought from Kintbury to Greenham.

Indeed, I was more desirous of examining the locality, and the conditions under which the skeletons occur, since I had already seen, by the courtesy of Mr. Walter Money and Mr. Montagu Palmer, a few of the old bones obtained at Kintbury, and had found that some of them presented certain interesting features, known to be characteristic of the oldest known human bones met with in caves in North Wales, West Yorkshire, Central France, and Gibraltar. I allude to the sharpness of the front edge of the shin-bone, and other prominent ridges and edges of the limb-bones. Archæologists and anatomists called this a "platycnemic" character, typified by the sabre-like or broadly compressed tibia or shin-bone. See "International Congress, Prehist. Archæol." Norwich, 1868, p. 160, &c. (Busk); "Reliquiæ Aquitanicæ," p. 97 (Broca); p. 256, &c. (Hamy); "Journal Ethnol. Soc.," London, January, 1871, p. 450 (Busk and Dawkins); "Cave-hunting," p. 173, &c. (Busk and Dawkins). The sharpness, however, of the shins and other ridges is not so strongly developed in the bones at Kintbury as in other cases.

Desirous of knowing more about these remains, and the early people whom they represent, I enjoyed the advantage of Mr. Walter Money's aid and company in examining the interesting locality

referred to. Under the surface soil of the sloping field in which the chalk pit has been dug, we noticed several sections of graves or cists that had been dug in the chalk to the depth of nearly three feet, filled in with disturbed chalk and earth, and subsequently covered over by accumulations of soil. One of these ancient graves, which had been trenched upon in digging the chalk, was seen in section on the face of the pit, looking south; it showed some bones just exposed, and we carefully examined it by digging down to its floor, and right and left to some portions of its east and west sides; but we had not time nor convenience to expose its whole extent. In the lowest portion of its rubbly infilling we found remains of two adult skeletons, some parts of which had already fallen away into the chalk-pit; also a skeleton of a female, with the bones of a child apparently in her arms; also the skeleton of a tall old man, and indications of one or more skeletons which we did not unearth. The four first-mentioned skeletons lay with their heads to the west, on the back or side; the woman on the side and bent forward; the old man on the back, with the head bent sharply forward. They looked as if the corpses had been placed in the graves without much care, and without coffins or cements of any kind. The leg-bones of some other skeletons (not uncovered) reached over from the east side of the grave, and crossed the feet of some of those above mentioned. Nothing was found with the bones; but on a protruding portion (mastoid process) of the base of one of the skulls was a stain of verdigris, apparently indicating the probable existence of some copper or bronze article there at a former period. If this were the usual *obolus* placed in the mouth of the deceased, according to Roman custom, some approximation would be made as to the probable date of burial; but the indication is poor, and nothing else was found to substantiate the notion. From the peculiar race-character of the bones mentioned above, namely, their relatively sharp ridges, we might refer the remains to those prehistoric inhabitants of our islands and of Europe, who used stone implements, and lived here and there in caves. The shape of the skulls we examined is that of the same cave-folk; and their nearest existing allies, judged by such natural standards, are said to be the Basques, Iberians, and Aquitanians; and the Finns are regarded as not far removed. Indeed, these people are supposed to be remnants of a primeval race who retreated before the Celts, invading Western Europe from the East, just as the Celts retreated to the same and neighbouring fastnesses when pressed, in their turn, by the Teutonic and other races. The Iberians and Celts are thus found together in Ireland, Wales, and elsewhere. This subject is treated of in Professor Boyd Dawkins' interesting book on "Cave-hunting" (8vo, 1874), p. 225, &c., and references to Huxley and other ethnological authorities are there given.

Were the Kintbury skeletons buried when their race dominated in Britain? Are they the remains of Iberian survivors among a Celtic population, or even among inhabitants of a later date? Do their characteristics persist among the local population of to-day?

Can the Kintbury villagers boast of so old an ancestry? Have they, indeed, amongst them the bones of their forefathers who lived some two thousand, or even four thousand years ago?

Another point of interest is the reason and method of the interment of the prehistoric people, whose cemetery the chalk-pit has so long and so largely invaded. They were buried, at least in some instances, several in a pit, pit-like grave, or cist. How should there be so many corpses to be buried together at the same time? Epidemics, famines, massacres do not often leave, in savage or half-civilised communities, many survivors willing or able to dig definite graves for individuals or families. Were dead chieftains, on the other hand, buried here, with their slaughtered slaves around them? If so, where then are the other traces of barbaric power and wealth, whether well wrought weapon of stone or implement of bronze, which accompany the mighty one on his journey home? Will more extended search find such indications in other graves of this old station?

The relatively large amount of animal matter existing in most of the bones may be against the notion of a very remote prehistoric burial, and favour the idea of the sharp-shinned people having lived on at Kintbury, with some modification of the platycnemic character.

We can, as yet, form scant notion of the habits and customs of the old folk who used this chalk slope, overlooking the Kennett, for their cemetery. They may have lived close by, or they may have had their fastness on the higher hill behind. A careful search for stone and metal implements, for coins, and for pit-marks of old earth-dwellings in the neighbourhood, such as the learned and acute Dr. Stevens, of St. Mary Bourne, has so successfully discovered in Hampshire, should be systematically carried out.

At all events, these bones seem to belong to a race of people whose scattered remains are found in various caves of immense antiquity, as old before history began, as history itself may be, and whose successors are traced in Europe of to-day. Whether they lived and died at Kintbury in those earliest days, or survived among new comers, is a point belonging to the story of this land, if it can be pieced together; and we hope to learn from the combined researches of archæologist and anatomist, of local explorer and the student of history, something to elucidate these questions.

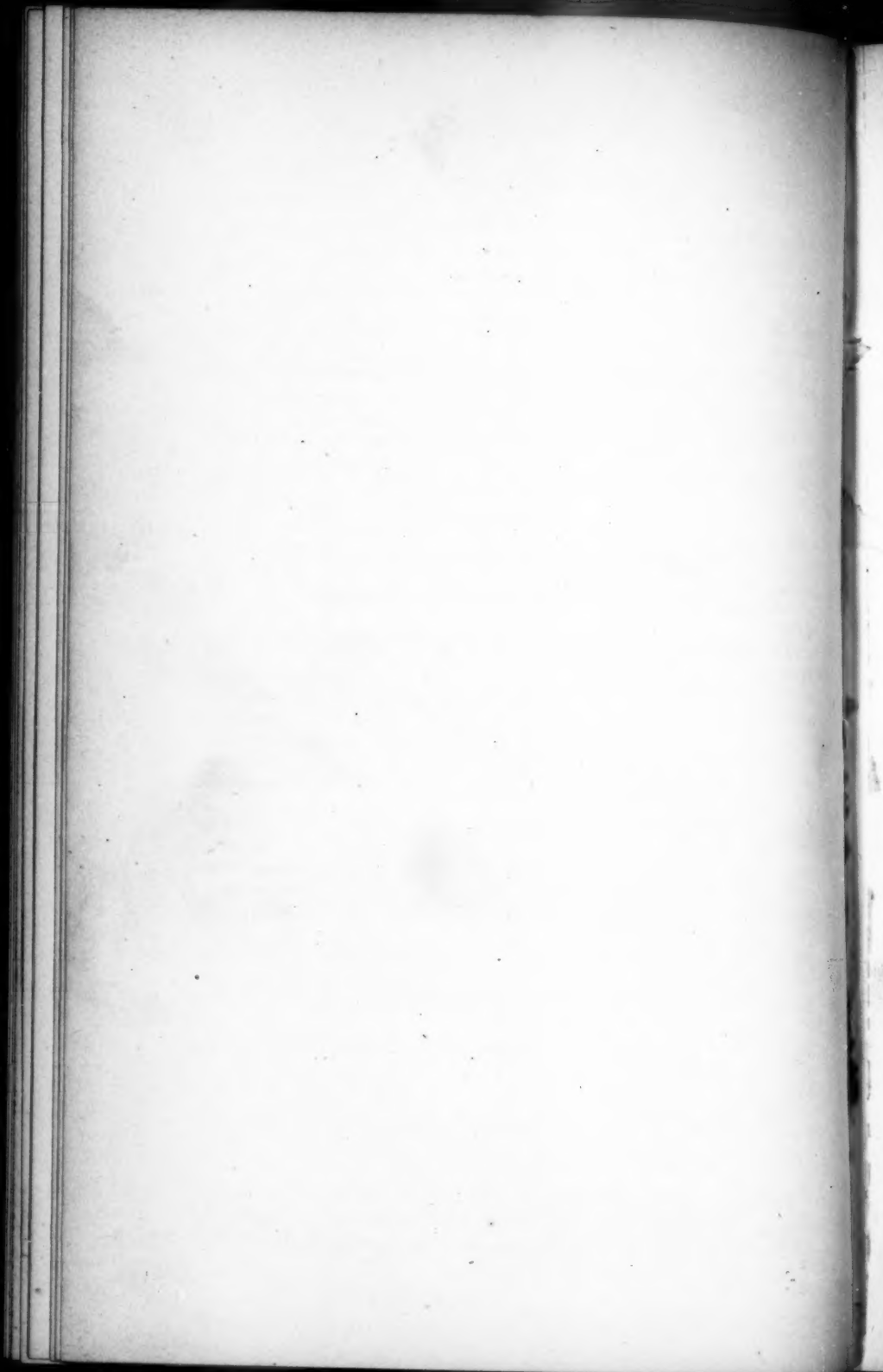
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THE JOURNAL
OF THE
ANTHROPOLOGICAL INSTITUTE
OF
GREAT BRITAIN AND IRELAND.

JUNE 13TH, 1876.

Colonel A. LANE FOX, *President, in the Chair.*

The minutes of the previous meeting were read and confirmed.

The election of the following member was announced:—Miss GOOLD.

The following list of presents was read, and thanks were voted to the respective donors for the same:—

FOR THE LIBRARY.

From the AUTHOR.—Treatise on Man. 2 vols. By George Harris, LL.D.

From the SOCIETY.—Proceedings of the Royal Society. Vol. XXIV. No. 169.

From the AUTHOR.—Report of the U. S. Geological and Geographical Survey of Territories, 1874. By Prof. F. V. Hayden.

From the EDITOR.—Materiaux pour l'Histoire de l'Homme, for May, 1876.

From the ASSOCIATION.—Journal of the East India Association. Vol. IX. No. 4.

From the BERLIN ANTHROPOLOGICAL SOCIETY.—Zeitschrift für Ethnologie, Siebenter Jahrgang.

From the SOCIETY.—Journal of the Royal Geographical Society. Vol. XLV. 1875.

From the AUTHOR.—The History of New Guinea. By Lieut. R. H. Armit, R.N.

From the EDITOR.—Revue Scientifique. Nos. 48, 49, 50. 1876.

From the EDITOR.—Nature (to date).

Professor Busk read the following paper; and skulls, poisoned arrows, and shell and stone implements sent to the President by the late Commodore Goodenough, C.B., were exhibited.

NOTES on a COLLECTION of SKULLS from the ISLANDS of MALLICOLLO and VANIKORO, in the NEW HEBRIDES GROUP. By GEO. BUSK, F.R.S. and V.P.A.I.

THE skulls which form the subject of the present communication, comprise eight from the Island of Mallicollo, and three from that of Vanikoro, both islands belonging to the New Hebrides group. Of the Mallicollese skulls three were presented a short time since to the Royal College of Surgeons, by Dr. A. Corrie, R.N., and the others, together with those from Vanikoro, were sent to the President by the widow of the late lamented Captain Goodenough, by whom they had been procured.

The collection altogether is of especial interest, and more particularly the Mallicollese crania, inasmuch as no specimens from that island have apparently ever before come under scientific inspection, although at the same time the shape of the heads of the inhabitants, from the time of the discovery of the island by Captain Cook, has been known to possess striking peculiarities. It had also, as will afterwards be more particularly noticed, attracted the attention of the illustrious Blumenbach.

The Island of Mallicollo, or Manicollo, is, I believe, the second in size of those constituting the New Hebrides group, and lies in lat. $16^{\circ}25'$ S. and long. $167^{\circ}57'$ E. Of the interior of the island, which is of considerable size and supposed to be very populous, little or nothing is known beyond the circumstance that it is densely wooded. And intercourse with the natives has, from the first, been so difficult and dangerous that but little is known of their manners and customs, nor in that respect has anything of importance been added to what is stated by Captain Cook and the two Forsters, who accompanied him, all of whom appear to have been deeply impressed with the peculiar physical and mental characteristics of the natives. Of these the fullest particulars are given in the account of the younger Forster, and it will be interesting to cite some of the points adverted to by him.

He describes the natives of Mallicollo "as of a blackish brown colour, the hair black, frizzled, and woolly. Their features," he says, "are more extraordinary than all the rest. They had the flat broad nose and projecting cheek-bones of a negro, and a very short forehead which had sometimes an unusual direction, being something more depressed than in well-formed men. Their slender form, their ugly features, and their black colour often provoked us to make an ill-natured comparison between them and monkeys. We should be sorry, however," he goes on to remark, "to supply Rousseau, or the superficial philosophers who re-echo his maxims, with the shadow of an argument in favour of the Orang-outang system."

But notwithstanding this pithecoïd aspect, he states that "they were the most intelligent people we had ever met with in the South Seas; they understood our signs and gestures as if they had been long acquainted with them, and in a few minutes taught us a great number of words." Their language was wholly distinct from that general language of which several dialects are spoken in the Society Islands, the Marquesas, the Friendly Isles, the Low Islands, Easter Island, and New Zealand. The most singular sound was a shake or vibration of *brrr* together. Thus," he says, "what they wanted in personal attraction was made up in acuteness of understanding." He notices a fact also which is of some interest on the present occasion, since one of the skulls from Vanikoro is coloured in the same way, viz. that "some of the women covered their heads with the orange powder of turmeric root, and some had daubed their face and others their whole body with the same colour."

Mr. G. Forster also remarks that the natives in some parts of New Guinea and Papua seem to correspond in many particulars with what may be observed among the Mallicollese; and concludes with the observation, which all subsequent voyagers have merely confirmed, "that we chiefly observed two great varieties of people in the South Seas—the one more fair, well limbed, athletic, of fine size, and a kind, benevolent temper; the other blacker, the hair just beginning to become woolly and crisp, the body more slender and low, and their temper, if possible, more brisk, though somewhat mistrustful. The first race," he states, "inhabits Otaheitee and the Society Isles, the Marquesas, the Friendly Isles, Easter Island, and New Zealand, whilst the second peoples New Caledonia, Tanna, and the New Hebrides, especially Mallicollo."

The elder R. Forster, speaking of the natives of Mallicollo, describes them as a small, nimble, slender, black and ill-favoured set of beings, that of all men he ever saw border the nearest upon the tribe of monkeys. Their skulls (meaning, I presume, their heads), he remarks, are of a very singular structure, being from the root of the nose more depressed backwards than in any of the other races of mankind which they had formerly seen. He also notices the harshness of their features and the breadth of the cheek-bones and face, giving the whole countenance a highly disagreeable aspect. He notices the circumstance, also, that some were hairy all over, which was likewise observed in the natives of Tanna and New Caledonia, with whom the Mallicollese agreed in their black colour and woolly hair. He adds the remark, that the depression of the forehead in the latter "may perhaps be artificial."

The above quotations are given mainly for the purpose of

showing that from the first the negrito character of the natives of the New Hebrides was fully recognised, and that among the Melanesian races those of the Mallicollese population were peculiarly distinguished by the form of the head or skull, which was such as in the eyes of a competent observer to lead to the suspicion that it might be due to artificial deformation.

As I have already said, although apparently no skulls from Mallicollo had come into the hands of collectors, their peculiar conformation (or rather that of the living head) was noticed by Blumenbach in the second edition of his work, "*De Generis Humani Varietate nativâ*," 1781, p. 87, where in speaking of his fifth form of skull (the Malayan), to which he refers that of the South Sea Islanders generally, he adverts to the inhabitants of the Island of Mallicollo as affording an exceptional form, and not, as Dr. Barnard Davis* seems to imply, as typical of his fifth variety of man.

This remarkable peculiarity of form is well shown in the present collection, from which two well-marked specimens have been selected for the purpose of illustration (Plates i. and ii.).

One of the most striking features presented in the Mallicollese skulls, and which is in greater or less degree common to them all, is the extreme flattening or depression of the frontal region, accompanied with a not very strongly marked depression immediately behind the vertex, whilst at the same time there is no flattening in the occipital region. This peculiar deformation can only, I think, be regarded as artificial, as was suspected by R. Forster. It might be effected by a piece of bark or wood being bound on the forehead by a band passing round the back of the head and over the vertex in a figure of eight fashion.

This accords in some respect with what is stated by Dr. B. Davis† with regard to a skull from Noukahiva, one of the Marquesas Islands, "which," he says, "has much the appearance of having been distorted by art, and if so, probably in the mode used by the Caribs of St. Vincent figured by Goss."‡ But I would remark that a considerable difference exists in these two instances in the circumstance that in the Carib skulls, as in the Peruvian, &c., there is evidence of counter-pressure by a flat surface upon the occiput, which is wholly wanting in the Mallicollese skulls.

In further support of the notion that the peculiar frontal

* "On the Peculiar Crania of the Inhabitants of Certain Groups of Islands in the Western Pacific," 1866, p. 1. (*Natuur k. Verhandel. v. d. H. Maatsch, d. Wetensk. &c. Haarlem. xxiv. Deel.*)

† "*Thesaur. Cranior.*" 1867, p. 319.

‡ "*Deformations Artificielles du Crâne*," Pl. vi. fig. 3.

depression in the Mallicollese cranium is artificial, I would advert to the fact that in those from Vanikoro, an island only a few miles distant, and inhabited, as it would seem, also by a similar Melanesian race, there is no such depression, as will be seen in the figures given of skulls from Vanikoro (Plates iii. and iv.), nor, so far as I am aware, has the same cranial deformation been observed in any other Melanesian race. Nor have I been able to find any reference to the practice of artificial deformation amongst that race elsewhere.*

This feature therefore may be, perhaps, at present regarded as limited to the Island of Mallicollo, which is in itself a very remarkable circumstance.

The other characters of these skulls are more or less common to the Melanesian or Negrito race in general, if we except, perhaps, the Andamanese. Amongst these characters will be remarked (1) the small size of the calvaria or cerebral part as compared with the facial portion of the skull; (2) the great development of the mastoid region, as is particularly shown in the skull R.C.S. No. 5,402 K, Plate ix., which also shows (3) the great prominence of the zygomatic arches and the comparative narrowness of the frontal region; and (4) the intervention of the temporal between the parietal and alisphenoid, which is also shown in No. 5,402 I, Plate x., and in several others of the skulls in the collection, and which, as is well known, is so common a condition in the Tasmanian and Papuan branches of the Melanesian race.

5. In the general preponderance in length of the parietal longitudinal arc over the frontal the New Hebridean skulls are distinguished from the Tasmanian, and agree, so far as my observations extend, with those from New Guinea.

6. In several of these skulls the two median upper incisors have been removed during life, a practice, as is well known, pursued by many and (geographically) very distant branches of the Papuan and Australian races.

Regarding the present collection as affording fair average specimens of the New Hebridean race, if they are compared with other of the lower dolichocephalic races and with the modern European as a point of comparison, it will be observed from the data in Table II—

1. That in *general dimensions* they stand the lowest with the exception of the Veddahs and Andamanese, but are nearly on a par with the Intratropical Negro, Hottentot, and Bushman.

2. That in the *frontal region* they are the most deficient of any except the Bushman, Veddah, and Andamanese, rather

* It is said that the Samoans distort the children's heads, but in what direction they are distorted has not been described.

exceeding the Intratropical Negro, and being equal with the Hottentot.

3. That in the *parietal region* they exceed all the lower races enumerated in the Table, except the Tasmanian. The number representing this region in the European skulls is greater, but if we regard the higher number, by which the "*general dimensions*" of the European skulls are expressed, it will be seen that the parietal region in the New Hebridean is proportionately rather more developed. It would seem that this excess is mainly due to the greater length of the parietal longitudinal arc, or of the sagittal suture, and not so much to lateral expansion of the middle cerebral lobes. And this appears to me one of the most marked characteristics of the New Hebridean crania.

6. In the proportionate dimensions of the occipital region the New Hebridean skulls agree very closely with the Hottentot, Bushman, Australian, Tasmanian, and Intratropical Negro, whilst they exceed the Veddah, and still more considerably the Andamanese, and are much behind the European.

7. The mean cubic contents of the skulls in the present collection are equal to about 76 cub. in. for those from Mallicollo, and about 82 for those from Vanikoro; one of the latter, however, contains 85 cub. in., and the other, that of a young female, only 79. And as among those from Mallicollo, two contain 78 cub. in., and one 80 cub. in., the cubic capacity of the male skull might probably be regarded, on the mean, as about 78 or 79 cub. in. In Dr. B. Davis's Tables the mean capacity of New Hebridean crania, exclusive of Mallicollo, appears to be about 83 cub. in.

With respect to other peculiarities of these skulls I would remark:

1. On the great altitudinal index presented by those from Vanikoro, in one of which it is as much as .844, and in the other two, .802-.826, or on the mean about .823, which is a higher figure than I have obtained from skulls of any other race, not even excluding those of the brachycephalic type. The comparative value of this character will be seen in the last line in Table II.

Taking the whole present collection, the mean altitudinal index is about .773, and this is very nearly the same as that assigned to the New Hebridean and New Caledonian skulls taken together by Dr. Barnard Davis. As the latitudinal index is .709, the difference between the two is 64. In the other races enumerated in the Table the difference varies from 17 and 20 in the Bushman and Tasmanian, to as much as 83 in the Veddahs. But in the skulls from Vanikoro the difference rises to 115, and taking the entire collection of New Hebridean skulls it is 64. From the data afforded in Dr. Barnard Davis's "*Thesaurus*," the difference in the case of New Cale-

donian skulls appears to be about 90, and 50 in those from the New Hebrides group.

It would appear, therefore, that among the Melanesian race of the New Hebrides and New Caledonia, in many cases the skull presents an unusually high altitudinal index.

This is quite in accordance with Dr. B. Davis's observations with respect to the great prevalence among the natives of the Solomon Islands, New Caledonia, the Loyalty Islands, the New Hebrides, and the Feejees, of long, narrow, and high calvariae, and "by which," as he says, "they are decidedly and distinctly characterised." To this form of skull he has applied the term *hypsistenocephalic*, which is perhaps also equally applicable to the skulls of the Veddahs, so far as I am acquainted with them.

2. With respect to the degree of prognathism in the New Hebridean skull, as shown by the "gnathic index," it would seem that though considerable, more especially in one of the Vanikoro skulls (a young female), still, upon the whole, it is less marked in the New Hebrideans than in either the Australian or Tasmanian, though rather greater than in the Hottentot or Bushman; and very much more so than in the Veddah and Andamanese, being about the same as in the Intratropical Negro.

3. Another striking feature of these skulls is the great expansion of the zygomatic arches. They appear to me to be the most decidedly phænozygous of all skulls that I am acquainted with.

Subjoined are Tables showing—

I. The various measurements of the New Hebridean skulls in the possession of the Royal College of Surgeons, and those sent by Commodore Goodenough, most of which have been liberally presented by our President to the College; and

II. A table showing the general dimensions, together with those of the three regions of the skull, with the cubic contents and various indices of the crania of most of the lower races of man, contrasted with the average modern European.

The numbers in the first four lines of this Table are merely comparative, and are not intended to indicate any absolute values. In order to render them intelligible to those who may not have noticed what I have said elsewhere, I may briefly explain that the figures in each of these lines are obtained simply by adding together the respective dimensions under each head in Table I.

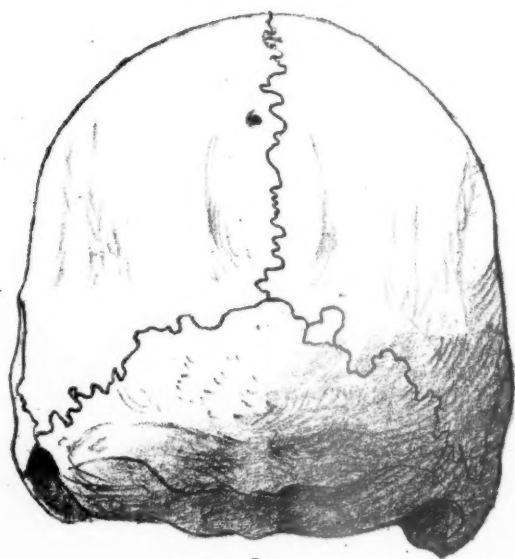
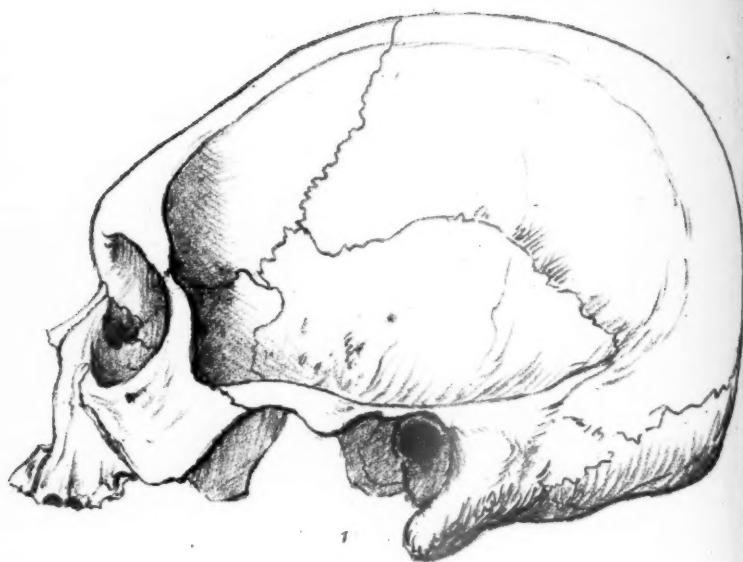
Thus, for instance, the numbers in the line headed "General dimensions" represent the sum of the mean *length*, *breadth*, *height*, and *circumference* of the skulls in each column, whilst those representing the different regions are made up by adding together all the numbers relating to that region, as they appear

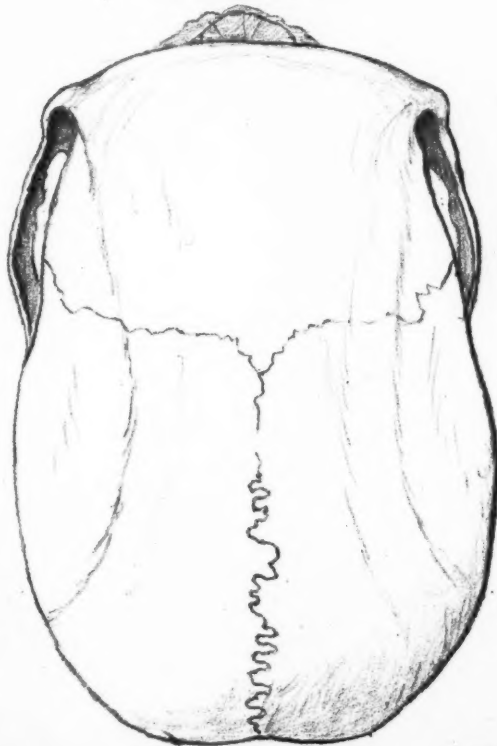
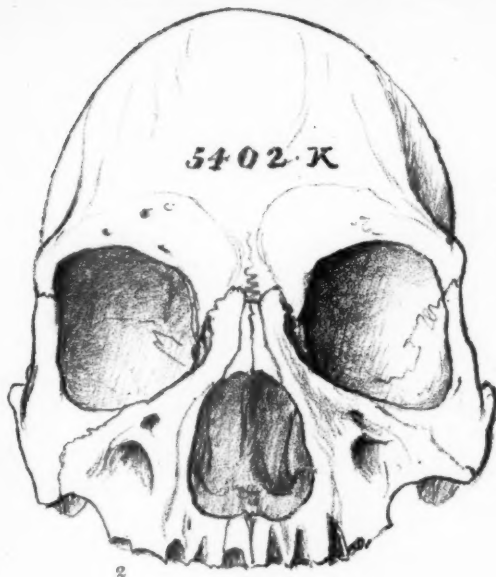
I.—TABLE OF DIMENSIONS, &C., OF ELEVEN NEW HEBRIDEAN SKULLS.

		Mallicollo, C.S. 1. ♂	Mallicollo, C.S. 2. [5403 L.]	Mallicollo, C. 3.	Mallicollo, F. 4. [5402 O.]	Mallicollo, F. 5.	Mallicollo, F. 6.	Mallicollo, F. 7.	Mallicollo, F. 8.	Vanikoro, F. 1.	Vanikoro, F. 2. ♂	Vanikoro, F. 3. [5404 L.]
1	Length ...	7.1	7.0	7.3	7.4	7.1	7.0	7.5	6.9	7.1	6.75	6.9
2	Breadth ...	4.95	5.2	5.1	5.4	5.15	5.0	5.1	4.7	5.0	4.8	4.9
3	Height ...	5.3	5.0	5.6	5.6	5.5	5.4	5.7	5.2	5.7	5.7	5.7
4	Least frontal width ...	3.9	3.7	3.6	3.7	3.8	4.1	3.9	3.6	3.9	3.6	3.7
5	Greatest „ „ ...	4.2	4.1	4.2	4.3	4.5	4.6	4.6	4.0	4.3	4.3	4.3
6	Parietal width ...	4.7	4.75	4.5	4.8	4.9	4.6	4.8	4.5	4.8	4.8	4.7
7	Occipital „ ...	4.4	4.25	4.3	4.4	4.1	4.4	4.1	4.1	4.5	4.2	4.0
8	Zygomatic „ ...	5.0	5.2	5.0	5.4	5.2	—	—	4.7	5.1	4.6	5.3
9	Frontal radius ...	4.1	3.8	4.0	4.3	4.3	4.3	4.8	4.0	4.6	4.4	4.7
10	Vertical radius ...	4.5	4.3	4.4	4.75	4.6	4.5	4.8	4.3	4.75	4.6	4.8
11	Parietal radius ...	5.0	4.8	4.8	5.2	5.0	4.8	5.1	4.8	4.9	4.8	4.8
12	Occipital radius ...	4.3	4.3	4.2	4.5	4.3	4.0	4.2	4.2	4.0	4.0	3.8
13	Maxillary radius ...	4.0	3.8	4.1	4.2	4.1	4.0	4.3	4.0	4.5	4.1	4.1
14	Fronto-nasal ...	3.4	3.5	3.5	3.5	3.7	3.5	3.9	3.6	3.65	3.5	3.7
15	Circumference ...	19.3	19.75	20.0	20.0	19.9	19.8	20.5	19.0	19.9	19.2	19.2
16	Longitudinal arc ...	14.0	13.9	15.0	15.4	14.7	14.7	15.4	14.1	14.8	14.6	14.9
17	Frontal „ „ ...	4.9	4.6	4.6	5.0	4.9	4.9	5.5	4.5	4.7	5.0	5.0
18	Parietal „ „ ...	4.8	5.1	6.1	5.8	5.2	5.2	5.6	5.3	5.6	5.0	5.4
19	Occipital „ „ ...	4.3	4.2	4.3	4.6	4.6	4.6	4.3	4.3	4.5	5.0	4.5
20	Frontal transverse arc...	10.9	10.6	10.8	11.5	11.8	11.8	12.3	10.8	11.8	11.6	12.2
21	Vertical „ „ „ ...	12.0	11.5	11.7	12.5	12.2	12.2	12.7	11.3	12.4	12.2	12.6
22	Parietal „ „ „ ...	13.1	12.8	12.8	13.5	12.8	12.8	13.3	12.6	13.0	12.8	13.0
23	Occipital „ „ „ ...	12.0	11.3	11.0	12.0	11.0	11.0	11.0	10.7	11.0	11.0	10.8
24	Latitudinal index ...	.695	.742	.698	.729	.725	.714	.680	.681	.704	.711	.710
25	Altitudinal „ ...	.746	.714	.767	.756	.774	.771	.760	.752	.802	.844	.826
26	Gnathic „60	.30	.60	.70	.40	.50	.40	.40	.85	.60	.40
27	Contents ... cub. in.	78.	73.	78.	80.	—	75.	—	72.	85.	79.	—

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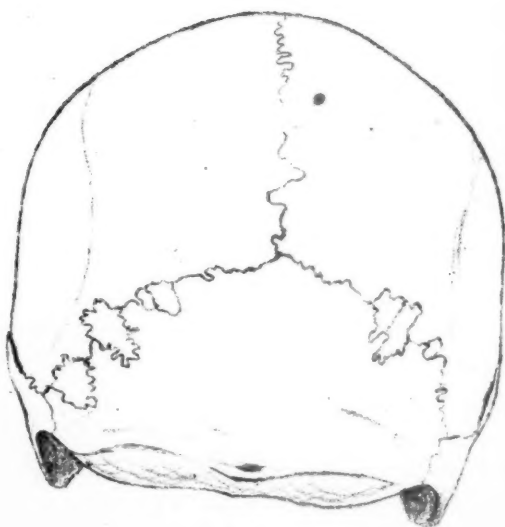
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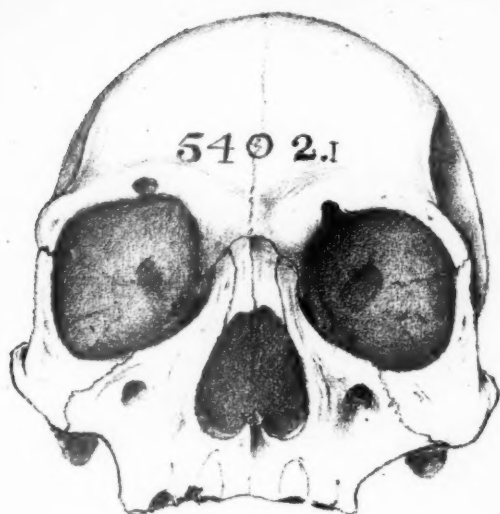




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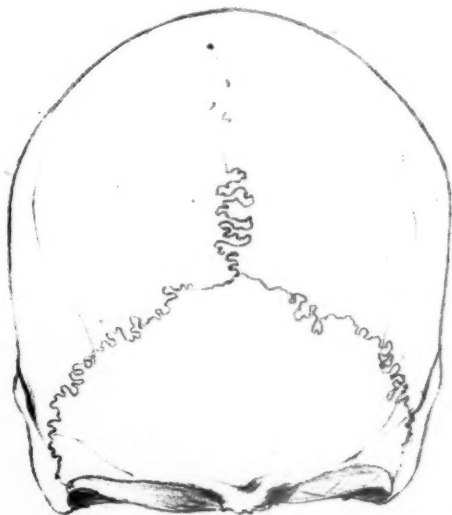


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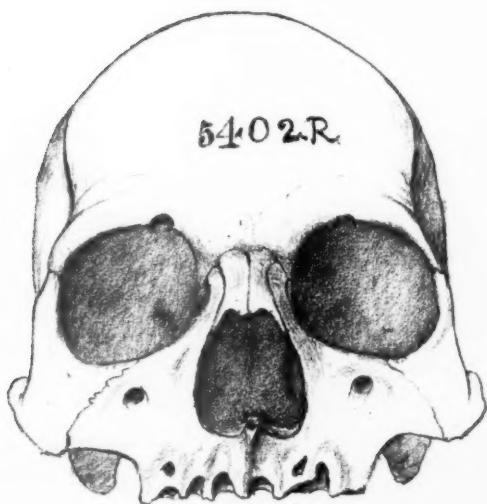
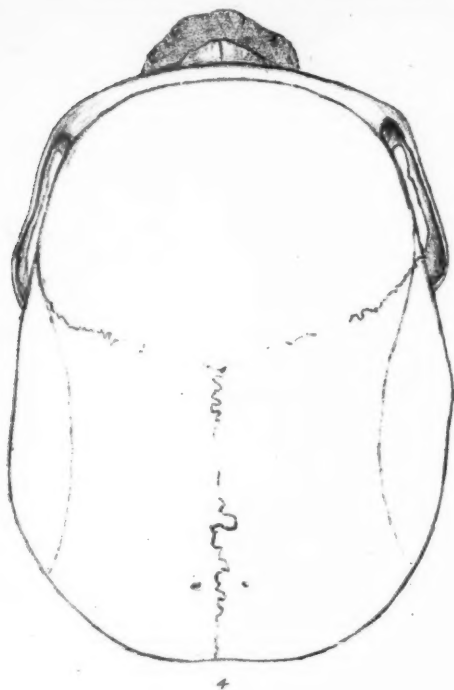
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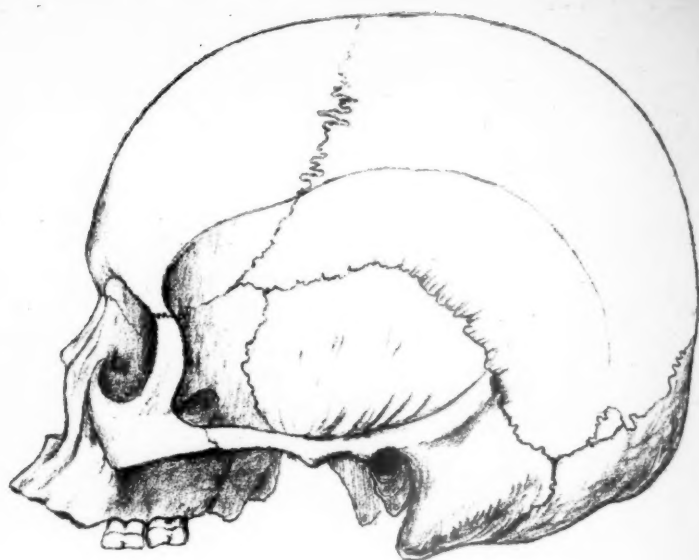


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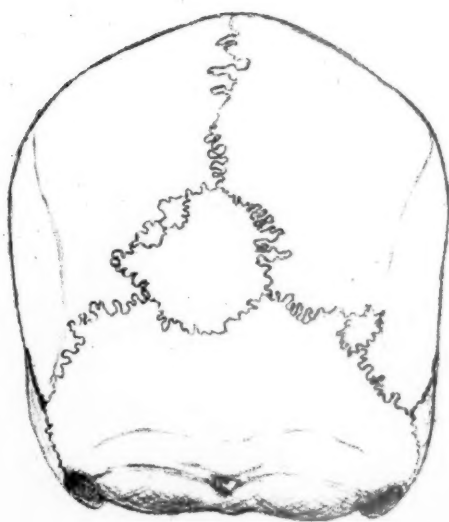
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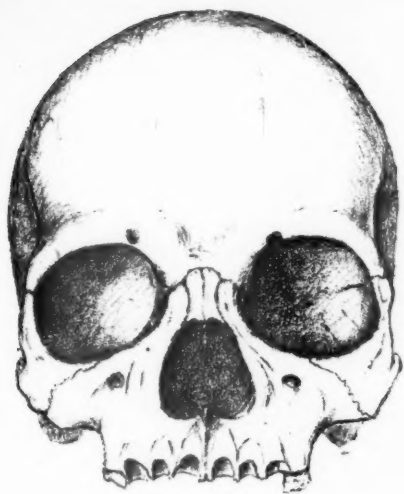
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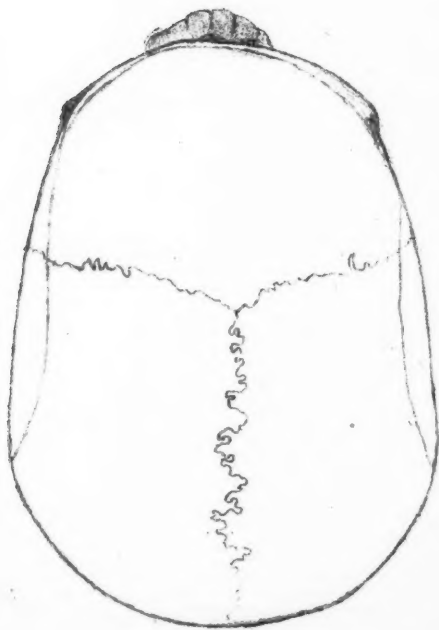
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in the Table. For instance, with respect to the frontal region, I add together the *least frontal width*, the *greatest frontal width*, the *frontal radius*, and the *frontal transverse and longitudinal arcs*; and so of the rest.

The *gnathic index* represents the difference in length between the *maxillary* and *fronto-nasal radii*, which in a perfectly orthognathous skull are exactly the same.

II.—TABLE SHOWING THE COMPARATIVE DIMENSIONS, &C., OF VARIOUS DOLICHOCEPHALIC SKULLS.

		European— dolichocephalic.	Intratropical Negro.	Hottentot.	Bushman.	Veddah.	Andamanese— brachycephalic.	Australian.	Tasmanian.	Polynesian. B.D.	Vanikoro.	Mallicollese.	New Hebrides. G.B.	New Hebrides. B.D.	New Caledonian B.D.
1	Genl. dimensions..	.385	.372	.375	.374	.355	.356	.375	.383	.382	.369	.370	.369	.375	—
2	Frontal region ...	.477	.455	.461	.457	.447	.442	.461	.472	—	.464	.461	.460	—	—
3	Parietal „ ...	.285	.268	.275	.275	.263	.273	.267	.283	—	.279	.279	.279	—	—
4	Occipital „ ...	.248	.234	.238	.241	.229	.227	.235	.242	—	.234	.241	.240	—	—
5	Cubic contents ...	*92	*87	*80	*77	—	—	*81	*82	*88	82	76	77	*83	*89
6	Latitudinal index..	.742	.721	.745	.759	.718	.812	.706	.756 ⁽¹⁾	.773 ⁽²⁾	.708	.710	.709	.720	.700
7	Altitudinal „ ...	.775	.765	.783	.742	.801	.821	.761	.736 ⁽³⁾	.793 ⁽⁴⁾	.823	.755	.773	.770	.790
8	Gnathic „ ...	.20	.56	.41	.42	.22	.38	.70	.60	—	.68	.50	—	—	—
9	Difference between altitudinal and latitudinal indices ...	33+	44+	38+	17+	83+	9+	55+	20+	20+	115+	45+	64+	50+	90+

(1) .710—B.D. (2) .73)—B.D. (3) .743—B.D. (4) .743—B.D.

* The numbers with asterisk as taken from data afforded in Dr. B. Davis's "Thesaurus."

DESCRIPTION OF PLATES.*

Plate IX.—Skull from Mallicollo, in the collection of the Royal College of Surgeons.

Fig. 1.—Norma lateralis.

Fig. 2.— „ facialis.

Fig. 3.— „ occipitalis.

Fig. 4.— „ verticalis.

Plate X.—Skull from Mallicollo, in the collection of the Royal College of Surgeons.

Fig. 1.—Norma lateralis.

Fig. 2.— „ facialis.

* These four plates have been kindly contributed by Prof. Busk.

Fig. 3.—Norma occipitalis.

Fig. 4.— „ verticalis.

Plate XI.—Skull from Mallicollo, in the collection of the Royal College of Surgeons.

Fig. 1.—Norma lateralis.

Fig. 2.— „ facialis.

Fig. 3.— „ occipitalis.

Fig. 4.— „ verticalis.

Plate XII.—Skull of young female, which is coloured with turmeric, from Vanikoro.

Fig. 1.—Norma lateralis.

Fig. 2.— „ facialis.

Fig. 3.— „ occipitalis.

Fig. 4.— „ verticalis.

All the figures are half the natural size.

DISCUSSION.

Mr. WOOD said: Professor Busk in the course of his lecture, when remarking on the apparently artificially deformed skulls from Mallicollo, stated that these were the only instances among the South Sea Islanders of skulls so deformed. In the course of my last voyage in the South Seas, in the year 1873, I visited "Futuna," or Hoorne Islands, situated in lat. 14.14 S. long. 178.7 west. While yet at some distance from the island, several canoe loads of natives boarded me, and I at once noticed the extraordinary flatness of the backs of their heads. During my stay at the island I called the attention of one of their chiefs to this fact, who informed me that it was their custom to place a heavy roll of "tappa," or native cloth, on the heads of the young children, with the object of giving their heads a high and shallow shape, which is considered to be ornamental. I now beg to exhibit a very bad photograph of these natives, taken under considerable difficulties. Still, the centre figure and that on the right of the picture will, to some extent, illustrate what I wish to explain. After leaving Futuna I visited Wallis's Island, or Uvea, situated in lat. 13.23 S. 176.11 west, and found that the same practice was in vogue there. I may add that my servant, a native of Rotumah, who is with me here, assures me that the Tongans also practise this, and from the appearance of the Tongans' heads I do not doubt it. In support of my statements I will quote Ellis's "Polynesian Researches," vol. ii. p. 15—"The facial angle is frequently as perpendicular as in the European structure, excepting when the frontal and the occipital bones of the skull were pressed together in infancy. This was frequently done by the mothers with the male children when they were designed for warriors" (Tahiti). I will also quote Marsden's "History of Sumatra," pp. 38, 39—"The women have the preposterous custom of flattening the noses and compressing the heads of children newly born, whilst the skull is yet cartilaginous. . . . Captain Cook takes notice of a similar operation at the Island of Ulitea."

THE PRESIDENT, Mr. PARK HARRISON, and others took part in the discussion.

Mr. DISTANT exhibited some Photographs of the natives of the Nicobar Islands, and made some remarks thereon, and has since communicated the following note on the bibliography of these islands :

Our PRESENT KNOWLEDGE of the NICOBARIANS.

THE exhibition of photographs which I am enabled to make through the kindness of Mr. Raphael Meldola, were taken during the time that the "British Eclipse Expedition" remained at the island of Camorta, one of the Nicobar group. They are, I believe, the first that have ever been taken of these little known people,* and I trust that the Council will decide to reproduce one of the most interesting of the series in the pages of our Journal. Before making any further remarks, I have thought it might perhaps be aiding anthropologists to give a reference to all *original* authorities known to myself, who have visited and described these people; and as the precise ethnological affinity of the Nicobarians is still undefined, I have considered that the nature of their environment cannot but be taken into consideration, thinking it probable that this matter will be more studied by anthropologists in the future.

Geology.

Hochstetter, Dr., "Reise Novara."

Stoliczka, Dr. (abstract of above), "Stray Feathers," vol. ii. p. 36. Fuller translation of same, "Rec. Geo. Sur. India," vol. ii. p. 3.

Rink, "Die Nikobarischen Inseln." (Copenhagen, 1847.)

Ball, V., "Journ. Asiatic Soc., Bengal," vol. xxxix. p. 25.

De Roëpstorff, F. A., "Geographical Mag.," vol. ii. p. 44.

Great Nicobar, Little Nicobar, and Katchall are of coral formation; the other islands are of volcanic origin, and covered with "polycistine" clay. Mon. de Roëpstorff describes this clay as full of minute shells, and in digging a well, sharks' teeth and whale bones were found in the clay, 28½ feet under the surface of a hill.

Climate and Meteorology.

Rink, "Die Nikobarischen Inseln." (Copenhagen, 1847.)

Blandford, H. F., "Stray Feathers," vol. ii. p. 32.

De Roëpstorff, F. A., "Geographical Mag.," vol. ii. p. 44.

The temperature is very uniform, and averages 28° centi-

* Dr. Vogel took some at the same time, which, he stated, were for exhibition before the German Anthropological Society.

grade. Rainfall above 100 inches, but varies very much in different years. The climate is malarious and enervating.

Botany.

Kurz, L., "Stray Feathers," vol. ii. p. 34.

Ibid., "Journal of Botany" (new ser.), vol. iv. p. 321.

Diedrichsen, Ibid., vol. ii. p. 1.

The principal botanical peculiarities appear to be that the climbing bamboo (*Dinochloa Andamanica*) is on these islands as common as on the Andamans, but other erect bamboos are conspicuous by their absence. The most anomalous fact is the total absence of *Dipterocarps*, which stands in as great contrast with the flora of the Andamans and the surrounding countries, as the absence of *Cupulifera* from the Nicobars and Andamans, jointly in comparison with Burma, Malacca, &c. Mr. Kurz thinks that the flora will be found to resemble that of Sumatra.

Zoology.

Blyth, E., "Journal Asiatic Soc. Bengal," vol. xv. p. 367.

Ball, V., "Stray Feathers," vol. i. p. 51.

Hume, A. O., "Stray Feathers," vol. ii. p. 29.

Stoliczka, Dr., "Journ. Asiatic Soc. Bengal," vol. xxxix. p. 134.

Mr. Blyth found the peculiarity of the vertebrate fauna in the paucity of terrene species, whilst a large proportion of such as did occur were apparently peculiar to the locality.

Mr. Ball considers the Nicobarian avi-fauna to have a Malayan facies, whilst that of the Andamans is decidedly Indian.

On none of the islands are found deadly poisonous snakes, except on Teressa (De Roëpstorff). The almost total want of *Colubridæ* on the Nicobars is remarkable (Stoliczka).

Philology.

Rosen, "Erindringer fra mit Ophold paa de Nikobarske Øer Kjöbenhavn." (Copenhagen, 1839.)

Crawfurd, "Gram. and Dict. Malay Lan.," vol. i. p. 130.

Man, E. H., "Journ. Asiatic Soc. Bengal," vol. xli. p. 1.

De Roëpstorff, F. A., "Vocabulary of Dialects spoken in Nicobar and Andaman Isles," 2nd edit. (Calcutta, 1875.)

Fontana, N., "Asiatic Researches," vol. iii. p. 149.

Crawfurd considered the language of the Nicobarians to be a wholly distinct tongue from Malay, Javanese, or indeed any other language of the "brown complexioned race" of the Archipelago, and that it contained a strong Portuguese element. Mon. de Roëpstorff has now given such a copious vocabulary, as spoken in some of the different islands and at the Andamans, that philologists will have a better opportunity of forming conclusions than Crawfurd possessed with the scanty material that was then alone obtainable.

General Subject.

Dampier, "Voyages and Adventures."

Hamilton, "Pinkerton's Voyages and Travels," vol. viii. p. 430.

Hamilton, G. (communicated by Mr. Zoffany,) "Asiatic Researches," vol. ii. p. 337.

Fontana, N., "Asiatic Researches," vol. iii. p. 149.

Weisbach, Dr. A., "Reise Novara," 'Anthrop theil,' p. 51.

Scherzer, "Narrative of the Circumnavigation of the Globe by the Novara," vol. i. p. 481.

Atkinson, "Journal Ethnological Soc.," vol. ii. (new series), p. 137.

Rosen, "Erindringer fra mit Ophold paa de Nikobarske Öer Kjöbenhavn." (Copenhagen, 1839.)

De Roëpstorff, "Vocabulary and Dialects spoken in the Nicobar and Andaman Isles, with short account of the Natives, &c." 2nd edit. (Calcutta, 1875.)

De Roëpstorff, "Geographical Mag.," vol. ii. p. 44.

Distant, "Journ. Anthro. Instit.," vol. iii. p. 2.

Haensel, "Letters on the Nicobar Islands." (London, 1812.)

Halksworth, "Narrative of Visit to Car Nicobar." (Rangoon Miss. Press.) (Printed for private circulation.)

Hume, A. O., "Stray Feathers," vol. ii. p. 29.

Steen, Bille, "Bericht über die Reise der Galathea," 1852.

I have little more to say respecting these people than I have detailed in a previous paper to the Institute, more especially as since I made that communication the subject has been so ably and exhaustively treated by Mon. de Roëpstorff.

The first account of these islands is met with in some early Sanskrit Geographical Tracts. "In the countries of Chattala, and Barmánaca, Rama-chandra began his first bridge, in his intended expedition against Rávanna. The abutment took up the whole of these countries; and the Rama-chandra carried on his works directly towards Subela or Sumatra, and had nearly reached that island, when by the advice of Vibbishan, king of that country, he left off and began another bridge at Rámeswara in the south of India. Of the former bridge, seven piers are still to be seen, which form the Archipelago of the Andaman and Nicobar Islands, exhibiting vast ruins, consisting of all the rocks which surround them. The Hindus fancy that all ledges of rocks, and all islands placed in a line, are the remains of bridges, made either by the gods, or by the devils for some particular purpose."* It is only of the northern islands that we have any reliable information, and the interior of the Great Nicobar is still a "terra incognita." There are clearly

* Wilford, Col., "Asiat. Researches," vol. xiv. p. 453.

two, if not three races inhabiting these islands, one of which the photographs illustrate, whilst another is principally known by tradition to inhabit the interior of the Great Nicobar. These people have been described as living like beasts, or rather as worse, in fact, a description of a Great Nicobarian reads as veritably that of a true "homo sylvaticus." There has been no doubt great exaggeration, in the same way as the Andamanese were imagined before they were visited by trustworthy observers. It is of these people that Marco Polo probably speaks. "When you leave the island of Java (the less) and the kingdom of Lambri, you sail north about 150 miles, and then you come to two islands, one of which is called Necuveran. In this island they have no king or chief, but live like beasts. And I tell you they go all naked, both men and women, and do not use the slightest covering of any kind. They are idolaters."* I think there is little doubt that these people are Negritos belonging to Professor Huxley's Negroid type, having their probably close relations in the Andamanese, and the Semangs or Jacoons of the Malayan Peninsula. They are called Shobængs, and Mon. de Roëpstorff has lately seen a youth described as being of that race, whom he considered as belonging to the Mongolian type, but he, however, puts the proviso, "if the youth was a fair specimen of his race."

The same author refers to the "Tatat" people from Schowra, whom he pronounces to have a strong Mongolian element, differing in this respect from the men of Trinkut, Nancoury, Camorta, Katchall, and Car Nicobar, and he expresses the interest which will attach to the discovery whether these "Tatats" have anything in common with their cousins in the interior of the Great Nicobar.

I have previously described the happy condition of the inhabitants of Car Nicobar, their honesty and general morality, and I have been pleased to find since, that Dampier, who visited these islands in 1688, described them as honest, civil, harmless people, not addicted to quarrelling, theft, or murder, "that they marry, or at least live as man and wife, one man with one woman, never changing till death made the separation," and that they were punctual and honest in fulfilling their bargains.

The only change in custom I can discern is in the dress of the women. Mr. Hamilton (by Mr. Zoffany), in the paper to which I have referred, described the women of Car Nicobar, in the year 1790, as wearing a short petticoat made of a sort of rush or dry grass, not interwoven, but hanging something like the thatch of a house, evidently in the manner we see round the loins of one of the wooden figures as shown in some of the

* "Travels of Marco Polo," translated by Col. Tule, vol. ii. p. 248.

photographs. But even then, such as had received presents of cloth petticoats from the ships used them instead of the rushes, and commonly tied them under the arms. This is now a rule, and the rush petticoat is a thing of the past. The recorded progress of two hundred years seems, therefore, to be represented by a cloth petticoat.

Pottery is made at the Island of Schowra, and we learn from Mr. Fontana that at one of the islands, some of the natives having began to fabricate earthen pots, soon after died, and the cause being attributed to this employment, it has never been resumed, and they now go 15 or 20 leagues to provide them rather than expose themselves to so dangerous an undertaking. We thus see a people with the use of a rude pottery which they do not make themselves, and this from no inability, but simply from superstition. It would be interesting to know how often superstitious ideas of this kind have prevented a people from progressing in the commonest arts of life, and we must perhaps be careful in not always ascribing the absence of a common and useful fabrication to an arrested development, or a feeble progression.

The wooden figures of which previous mention has been made, and of which Mr. Atkinson treated in his paper, to which I have referred, generally, as Mr. Franks pointed out to me, resemble a Buddha. This is not, however, invariably the case, as one of the figures in the Christy Collection proves. They have probably been either acquired from some of the vessels which visit them, or copied from those originals. At first the result of the Nicobarian propensity for imitation, they have also had some mysterious value as being religious emblems of the people who possessed them. This seems to have sunk into a sort of Fetish, as Mr. Meldola tells me that he knew a man who always took one of these figures in his dwelling at evening, saying that if he did not do so, fever would ensue. Mr. Hume tells us that they also look upon the great robber-crab "*Birgus latro*"? as a sort of devil, and, though it plunders their cocoanut trees, will not meddle with it, as by so doing they would bring fever and death into their homes. I was told myself, when endeavouring to shoot a large lizard at Car Nicobar, that I should bring disease and trouble on myself. I was also told that the only remains of missionary effort was a solitary bible in the possession of one man, who used it for a pillow, and called it by the name of the Great Originator of Christianity. There is little doubt that in time this book, from at first being looked upon as some great cabalistic work of the white man, would eventually have some mysterious value attached to it and be also regarded as Fetish.

Mr. Fontana, who visited the islands in 1788, spoke of the general want of longevity. He saw no men older than 40 or 48 years, whilst the women, on the contrary, seemed to live much longer. It is curious to note in the photographs I now exhibit the absence of any aged men.

The following, communicated by Mr. Franks, was then read, and the photographs referred to were exhibited :

THE distinguished traveller, Signor S. M. D'Albertis, whose acquaintance I had the pleasure of making when he was last in England, has been good enough to send me some photographs from Sydney, which I beg to exhibit to the Institute. One of these is a portrait of a chief of the village of Katau, who served as an interpreter during the visit of the Ellengowan to the Fly River. He has also sent me the following account of his travels from a Sydney paper, and informs me that the Governor of New South Wales has placed a steam launch at his disposal to explore New Guinea. I hope, therefore, that we may look for important results from Signor D'Albertis' further explorations :—

“The excellent accounts published of the visit to the Fly River in the Ellengowan by Mr. MacFarlane and Mr. Chester leaves, as far as regards the descriptive appearance of the country, little for me to write upon. I therefore shall confine my remarks principally to the natives and animal life seen by the expedition, as far as my limited time would enable me to observe. I will give my own impressions, leaving to future travellers, who may have more time, the opportunity of adding to and completing with probably greater accuracy the observations I made. I will now relate my observations on the natives of Katau, a village situated at the entrance of a small river or creek at New Guinea, almost opposite to Cape York. The object of our calling at this village was for the purpose of obtaining the company of an old chief, Maino, who was to act both as interpreter and pilot during our proposed visit to the Fly River.

We landed at the village in the afternoon of the 2nd December. It was composed of four large houses only ; these habitations are remarkable for their great length, and each has accommodation for a number of married people. The houses are built on piles, and the floor is upwards of ten feet from the ground, and not far distant from high water mark. The houses have two frontages, and two entrances, opening upon a small verandah, where the natives are in the habit of sitting or employing themselves in various occupations or in conversation. Two wooden ladders communicate with the verandah, and are

in make superior to any I had seen before in New Guinea. The people, houses, and village are kept in a very dirty state, and the interior of the habitations were also in a similar condition, and from there not being any other openings to these extensive houses than those before mentioned, and from being in a smoked and dingy state, a visitor entering them would have to get his eyes accustomed to the darkness before he would be capable of distinguishing the objects or persons inside. Many families inhabit these houses, and to each family there belongs a small compartment where they cook and sleep. These houses resemble those used by the inhabitants of the north-western part of New Guinea, and the resemblance is still more striking to the traveller when he observes a trophy of skulls suspended near the entrance.

About forty men came to meet us on the beach, and at the same time the verandahs of the houses were crowded by women and young people. None of the men approached us armed, but we soon afterwards discovered that they had bows and arrows placed behind a house ready for any event that might happen. I certainly cannot see any harm in their taking these precautions, as it is very probable they have found out by experience that white people are not always to be trusted; still I do not consider they would keep only on the defensive position if they knew that anything was to be gained by taking the offensive. As soon as they saw that we had discovered their concealed weapons, they removed them in great haste to some other place. Some of the carved ones attracted our attention, and we were desirous of purchasing some of them, but they refused to sell any. In spite of their diffidence and reserve we remained several hours on shore visiting the houses, gardens, and the burial ground.

The plantations were all well fenced, and yams, taro, and bananas were under cultivation, and cocoanut palms were also abundant. The burial place was situated a short distance from the village, and close to the beach. We observed on the graves a quantity of provisions placed, consisting of bananas, cocoanuts, and also an old bow and some arrows. A strong fence had been erected round the graves, to protect them from any intrusion. The cocoanuts were empty, but the bananas were left untouched, most probably because as yet they were not sufficiently ripe. I may remark that the natives far West also adopt the custom of placing provisions and arms on the graves of the dead. When mourning for the dead, they paint the whole of the body of a white or yellow colour; whilst in the East of New Guinea the natives for a similar event paint themselves with black. At this place some peculiar adornments are

adopted by the women, in addition to the painting, consisting of an ornament made of fringed strings of grass or fibre, which they wear over the arms and legs below the knee, and a little above the ankle; but what imparts to the mourning women a remarkable appearance is a strange dress worn by them on this occasion, made of a bundle of small ropes, through which the head is passed, and extending over the body to the knee, and then fastened by a cord round the waist.

I observed that the natives used wooden pillows when sleeping, which were generally formed from a portion of the root of a mangrove tree, and cut so as to stand upon four legs. Among some of the pillows I observed one made in the shape of an iguana lizard, the head and tail of which were rudely carved; another was formed like a human head attached to the body of a reptile, and bearing some resemblance to a sphinx. The food of the natives appeared to consist principally of yams, sago, taro, cocoanuts, and an abundance of fish and turtle. The women wear a scanty covering, but the men are entirely naked.

The men are tall, of spare habit, with long arms and legs, but the body short. Among the women I saw many who were tall, with not very prepossessing features, but appeared to have great muscular power. The colour of their skin is generally of a dark copper colour, but I did not observe any so black as the natives of Cape York or of those of Tawan or Cornwallis Island. Their hair is frizzled and woolly, and often short. I examined some whose heads had been shaved, and perceived that the hairs are equally distributed over the scalp, and do not grow in tufts, but as soon as the hair commences to grow it assumes that peculiar tufted appearance which would readily deceive a superficial observer.

It would be difficult to decide which type predominates among them, so many are the individual varieties. I have seen some closely resembling the natives of Cape York, others similar to the Arabian race, and I consider it probable that there is also a mixture of the Papuan race among them inhabiting the western part of New Guinea; and I am more decided in my opinion when I observe not only their physical features, but I also consider that the natives of Katau resemble the Western people in the mode of constructing their houses, using the bow and arrows in preference to the spear; they have also two skin diseases peculiar to those people, named by them "Bento" and "Cascado." Also, like the Western people, they maintain the practice of hunting for heads, preserve the skulls of their enemies, and keep them suspended in their houses. They also adopt the same custom of preserving the lower jaw separate from the skull, and ornamented similarly to that which I have seen

done by the natives of Orangerie Bay, on the south-east coast. I could not, however, ascertain if they use the lower jaw as an armlet similar to that people. If this could be proved, my opinion would be strengthened that the Katau race have intermixed with the Eastern people.

In a few of the islands in Torres Straits there resides a peculiar variety of the so-called Papuan race, distinct from the inhabitants of other islands in the Straits. The largest island inhabited by the peculiar variety I have alluded to is Darnley Island. Many of the people of Katau have similar physical characters; so I consider it would be a task of some difficulty to discover the original type, for it has evidently been destroyed by the intercourse with other races.

Among the boys I did not observe such protuberant abdomens as is usually observed among these races. The boys appear to be more numerous than the girls, but probably the latter, being more timid, did not like to appear before strangers.

On the 7th of December we were at anchor opposite to a large village on Kiwai Island, about twenty-five miles from the entrance of the Fly River. The inhabitants of this village are on amicable terms with those of Katau, from which village two canoes had followed us by another route, arriving the day previous, and informing the natives of our intention to visit them. Many canoes came out to us from the village; they are very long, with a single outrigger, light, and only supported by two arms. Several of the natives came in to them to trade, bringing cocoanuts, bananas, yams, and mangoes. There were no women or children with them. They were all perfectly naked, but were ornamented with armlets and belts made of grass or rattan. They have, similar to the natives of Katau and other islands in Torres Straits, the helix of the ear pierced, and the lobes artificially elongated, and also perforated, and decorated as well as the helix with tufts of ornaments, made of grass and dyed of a red colour. I saw some of them who had the lobes of the ear extending to two inches in length. They were not armed, but their weapons are bows and arrows; they have also knives and tomahawks of iron, which they procure from the natives of Katau, and also from some of the islands in Torres Straits, who are kept well supplied with these articles by trading with the vessels engaged in the pearl fisheries.

The type of this race of people is more uniform, and the prognathic form is not common. The forehead is developed, and retreats backwards. The hair is frizzled and woolly, often short, and equally distributed over the scalp, and black; if worn long, it was greasy and dirty from being smeared with oil or fat mixed with earth and ashes. The natives are for the most part tall

and slender. About forty or fifty came on board. I thought at first that circumcision was practised among them, but I afterwards found I was mistaken. About eleven out of the number that came on board had tumours of the scrotum and enlargement of the inguinal glands, but they did not appear to be inconvenienced by it, for the one who had the largest leaped on board and again into his canoe with great agility. In the colour of the skin they resemble the natives of Katau, or they may be a shade lighter. The forehead is much depressed and narrow, the supraorbital ridges and the zygomatic bones are very prominent, the nose aquiline, and the septum perforated. They have small, dark, chestnut-coloured eyes, and in many of them I observed a bluish ring round the iris. They have strong and very white teeth. There is not very much hair over the body, although what they have is permitted to grow; they have thick and short beards. They did not evince any surprise at anything they saw, still they asked for any object that attracted their attention, even although it would have been quite useless to them.

I managed to get the following measurements of some of them, and the average of those I measured was as follows:—

	Inches.	Lines.
Circumference of the head	20	2½
Circumference of the chest above the nipples	33	2½
Circumference of the pelvis	31	2½
Length from the pelvis to the foot	39	2
Length of the leg	20	1
Length of the arm	14	1
Length of the forearm	11	1
Length of the foot	10	2

The average of the total height, 5 feet 8 inches. They smoke tobacco from large bamboo pipes similar to those used among other islands in Torres Straits, and also by the natives of Cape York. I have previously mentioned that the type of these people is more homogeneous than that of Katau. I still cannot, however, consider them a pure race.

Opposite Canoa Island, about seventy miles from the mouth of the river, there are some large villages, and a numerous population. Although on our first approach the natives displayed a hostile feeling, and advanced boldly to attack us, yet by the exercise of a wise policy towards them, and showing our power without inflicting any injury (except we had been compelled to do so for self-preservation), we succeeded in reconciling them, and we became very friendly; it terminated in a number of canoes coming to the steamer, several of the natives coming

on board and remaining several hours, regarding with great interest and curiosity every object that attracted their attention; they asked questions, and replied to any made to them through Maino, who acted as interpreter, making use of the Kiwai language.

From the anchorage not more than two houses of the nearest village were visible, one of which was estimated at about 500 feet in length; and a little behind the edge of the bank we could discern cocoanut palms, banana, and breadfruit trees growing abundantly about the village. On the top of one of the latter trees I observed the red feathers of the bird of paradise (*Paradisea raggiana*) suspended from a branch, which I supposed was placed there as a decoy to attract those birds to the snares placed for them by the natives, or to bring them within reach of their arrows, as is the custom among the Aru islanders.

The chief of the village also came on board. He was a fine-looking man and seemed very intelligent; he conversed freely, moving actively about, and laughing; although I do not consider, in spite of his cheerful manner, that he had dismissed his fear at being amongst a strange race of people, yet he seemed very much gratified at receiving so much attention and kindness shown to him, and being such an object of curiosity. He accepted everything given to him, but never asked for anything. From the natives that came on board, and from those I observed in the canoes, I made notes of their physical appearance. They bear a great resemblance to the people of Kiwai, but are a little lighter in colour and more slender in form. I saw some resembling Arabs. Their average height is moderate, the head comparatively small, the forehead depressed and sloping backwards. I observed so uniform a resemblance among them as to lead me to come at once to the conclusion that they must either intermarry among themselves or among a people of a similar race. What are they? is the question. If we take as a type of the Papuan race the inhabitants of the north-west part of New Guinea, I do not consider they belong to that race, but may be considered as approximating nearer to those of the south-east part—at least as far as we have had as yet an opportunity of observing those living on the coast.

I met natives who were on a visit at Yule Island, who came from Cape Possession, and closely resembled them. However, I do not believe they are a pure race. In common with the two races of the East and West, many customs, &c., showed that they participate in the two races. They have, similar to those of the North, the hunting for heads, and the construction of their habitations, although at this place there is a slight difference in

them, for here the houses have as many openings in them as there are inside compartments. Similar to those of the West, they build their canoes in the same manner, wear a head-dress made of the plumes of the birds of paradise, a heavy wooden belt, and a breastplate of mother-o'-pearl shell. Peculiar to themselves I observed a helmet very skilfully made with rattan and cord, also a piece of white shell used as a portion of their war dress, and worn over the pudenda. But that which was most peculiar to them, and new to the ethnologist, was the method adopted by them in preserving the heads of their enemies.

In the North, as is well known, the natives are of a very ferocious character, and very active head hunters, but preserve only the skulls. At Katau the natives also hunt for heads, and preserve the skulls, at the same time separating the lower jaw, which is said to be used occasionally as an ornament. But these people do not only hunt for and preserve the skulls, but they are in the habit of adorning them with great skill, and this process is, as far as I have observed, quite novel in New Guinea, although I believe the practice is adopted at other islands east of New Guinea.

After the skulls have been perfectly cleaned they cover them with a mask, formed from a preparation of wax, probably mixed with some resinous material; the mask extends from the upper part of the forehead to the roots of the teeth of the upper jaw. The upper part of the mask is adorned with the bright red seeds of the wild liquorice vine (*Abrus precatorius*), and the outer edge is adorned by plaited stripes of rattan. The eyes are represented by two small species of the cowrie shell, or a black seed also surrounded by the scarlet seeds of the *Abrus precatorius*; from the zygomatic process of the temporal bones, two long fringed ear-pendants are suspended, similar to those generally worn by the natives. The lower jaw is strongly fastened behind to the zygomatic bones, and in front by small rattan cords from below the symphysis of the chin, passing inside the nasal passages. In this way the lower jaw is secured to the upper. To this is attached a loop of plaited rattan, two feet long, which is used as a handle. This loop is secured to the skull by a transverse stick of hard wood, passing behind the two condyles of the lower jaw, and in front of the foramen magnum. In removing the mask from one of the skulls, I found the orbits were almost entirely filled with lime, and the long thorn of the sago palm was inserted in the optic foramen. To give support, strength, and the required length to the nose, a piece of rattan is ingeniously used, and the distension of the nostrils effected by the insertion of sago thorns and grass. The interior of the skulls was found partially filled with stones, hard seeds, pumice-

stone, and kept in by dried grass. When held by the loop and swung about, a loud rattling noise is produced, and we infer from it that they are probably used in their dances.

The weapons used by these people are bows and arrows. The bows are about six feet high, the arrows vary very much, some are pointed with hard wood, others with bamboo, bones, and a few with the long nail of the cassowary. It is said that some of the arrows are poisoned, and I believe the statement, which was also confirmed by Maino, and from the following fact. I asked the natives to sell me some of their weapons, and they readily did so, but when I wanted to purchase one pointed with bamboo they refused, until I offered so high a price that they could not resist the temptation, and then handed it to me with the greatest care, so that no one should be touched by the point, which appeared to be smeared with some preparation of a reddish colour. As far as I could ascertain by signs, I understood them that some were poisoned, but not the others.

They always carry with them a bamboo knife, which is used for severing the heads of their enemies; they do not usually keep it sharp, but when required they sharpen the edge with a shell (a fresh-water species of *Cyrena*), which is always carried for the purpose, attached to the knife. They have also a kind of dagger, formed from the thigh-bone of the cassowary, the handle of which is tastefully adorned with the red seeds of the *Abrus precatorius*. The dagger is used to dispatch the wounded man, and then the bamboo knife to cut off his head.

The *worthy* Maino, who according to his own confession had cut off thirty-three heads himself, gave us a full and minute description of his mode of operation. It was thus: when the victim was dead the skin and muscles of the neck were cut through, then grasping the head with both hands, it was forcibly inclined from one side to the other, and then by a powerful twist the bones of the neck were dislocated, and by a little further aid from the knife the head was off. To give us an illustration how it was done, he acted fictitiously on a man on board.

The further the traveller advances into New Guinea the greater the difficulty is increased of enabling the anthropologist to solve the problem of the Papuan race, and I do not consider that we shall be able to come to any conclusion respecting them until more of the interior has been explored, for short visits to the coast will not serve the purpose, and also until we have become acquainted with their language, as well as a comparison of the skulls of the various races. I am aware that some anthropologists do not place much dependence solely on the skulls, still it has been found of great assistance in some degree of determining the various races.

I regret not being able to procure a single skull of a native of Yule Island, for I consider it would have proved interesting to compare with the ten I procured from the natives of the Fly River, for which I am indebted to the kindness of Mr. Chester. This collection of skulls is most interesting both to the anthropologist and the ethnologist; perhaps more to the first than the last, for they differ very much from all the New Guinea skulls we have yet obtained, so much so that we are led to believe that they belong to quite a different race of people.

On comparing the measurements I made of three skulls from the Fly River, one from York Island, and another from a small island near Prince of Wales Island in Torres Straits, the result was as follows:—In the Fly River skull the breadth is to the height as 88 to 100, 84 to 100, and 85 to 100, so they belong to the brachycephalic form. In those from Torres Straits they were 71 to 100, which places them in the dolicocephalic division. It is remarkable that all the skulls I procured at random at the Fly River are so much alike that it is difficult to distinguish any difference one from the other, still when comparing them with notes I made on some of the natives of Yule Island, especially those from or near Cape Possession, I do not hesitate to say that the natives of the Fly River are more allied to the Eastern than to the Western race.

On the 14th of December we were 150 miles up the Fly River, the furthest point reached by the Ellangowan. Not far from our anchorage I found the ruins of an old village composed of five houses. They were from 30 feet to 40 feet in length, and from 15 feet to 20 feet wide; they were constructed of the trunks of small trees, and had been covered with palm leaves. The floor was only a foot and a half from the ground; a trench, 2 feet wide and about the same in depth, had been dug all round the habitations, for the purpose of draining them, a most remarkable and novel proceeding for New Guinea. Close to the village I observed some wild bananas growing, and a grass, called "Job's Tears" (*Coix lachryma*), the seeds of which are used generally in New Guinea for making necklaces and other ornaments.

This ruined village was so far distant from the last natives we saw that I am inclined to consider that it had been inhabited by some of the natives of the interior. The general appearance of the country on the borders of the river consisted of low swampy islands, formed by a large delta, some old and some more recently formed, by the mud brought down by the floods or the natural flow of the water: some are evidently in a state of formation, while others are disappearing, being washed away by the current. This, I expect, will be the fate of Canoa Island,

which had very recently been severely injured by a hurricane, destroying a large number of trees, and its banks can almost daily be seen to be washed away by the floods and currents. The relative age of the different islands may be estimated by the rich or poor vegetation seen upon them. Here the wild nutmeg and gigantic fig trees are seen in fruit and luxuriance of foliage, attracting the fruit-eating pigeons (*Carpophaga*), the red bird of paradise (*Paradisea raggiana*), horn bills (*Buceros ruficollis*), and other species of frugivorous birds in great numbers. At another part the candle-nut tree (*Aleurites*), and several species of kanary-nut trees (*Canarium*), on the fruit of which the great palm cockatoos (*Microglossus aterrimus*) feed."

Mr. Brabrook then read the following paper, in the absence of the author :

SOUTH SEA ISLANDERS. By W. L. RANKEN.

THE inhabitants of the islands of the South Sea are called generally Polynesians, sometimes distinguished as Black or Red, North or South ; but as races, there are two distinct stocks, the one approaching African types, the other Mongolian—the first generally considered Papuan, and the other without any distinctive name. There need be no delay in giving this other race—of red men, having straight hair—the one family name by which they call themselves. As the dialects vary, as one group use the *r*, which another cannot pronounce, one the aspirate, another none, so the name of their race varies in different islands, but is always the same root. That name is *Mahori* in most southern groups, *Mahoi* in some, *Maori* in others. The first form of *Mahori* would be recognised by the great majority of the race as their own name, as distinctive from any Papuans or other foreigners, and the first will therefore be used for that purpose in this paper.

The writer proposes to show the extreme probability—

1. That Papuan races first occupied the South Sea.
2. That secondly, in time, a Mahori settlement was formed in Samoa.
3. That from Samoa they colonised the South Sea.
4. That, in so doing, those Mahoris sometimes intruded upon Papuans, intermixed with them, and thereby obtained the variety of appearance and character found among Mahoris.
5. That this Mahori migration was from the Indian Archipelago, and so recently that the Mahoris have many modern Malay words. But, inasmuch as the Mahori language has a different construction, remarkably few Malay roots, and many

peculiarities of its own, the Mahoris are not Malays, but a cognate race.

To do this, and sufficiently cover the ground of inquiry, it will be necessary to describe the peculiarities of the peoples, the contrasts of various islanders, the traditions of their origin or migration, from the writings of naturalists and travellers; to add the traditions which the writer found in Rarotonga; to meet any objections to such a course of migration; and to apply Mr. Crawford's critique upon the Mahori language to these conclusions.

Mr. Wallace and several other naturalists speak of the Polynesian and Asiatic races, and otherwise also indicate a belief in there having been a Polynesian continent having its own race of men. But there is no ground for believing such land has existed within any period calculable by ethnologist, or even by geologist. The floor of the Pacific Ocean must at one time have been dry land, but that must have been a very remote geological date, for many reasons. The coral atolls show a subsidence which, added to the time necessary to the disappearance of the mountains of which they are but the tombs, and of the continents upon which these ranges stood, must far exceed the utmost age of man upon earth, even if he has been millions of years, as some propose. And of any such continent there is no single animal left, while there are many isles large enough, and more than rich enough, to support numbers; nor is there a distinguishing flora. There is no evidence of an indigenous race having survived the subsidence in the Pacific of a continent, of which only some islands remain. It is more likely there has been a Lemuria in the Indian Ocean, as proposed by Professor Huxley; for the Fijian is more like a Kaffir than like his next neighbour the Samoan; and this resemblance to Africans runs through all Papuans from Fiji to Madagascar. The islands of the South Sea have been most likely colonised by many migrations of Papuans, and by two streams of Mahoris, peoples of two distinct stocks.

The two adjacent groups of Samoa and Fiji present as complete a contrast in their populations as any others perhaps; but such contrasts between neighbouring isles are very common. There is no better description given of the two types than that by Mr. Pritchard, who long lived both in Samoa and in Fiji. He says:—The Fijian's "skin is dark, rough, harsh; his hair, naturally black and copious, is bushy, persistently frizzled, almost wiry. Indeed, it seems something between hair and wool. His beard, of the same texture, is equally profuse and bushy, and is his greatest pride. His stature is large, but somewhat less than that of the Samoan or Tongan; his muscular development is more

perfect, while his limbs are less rounded and his figure generally alighter. His eye is restless, his manner suspicious, his movements light and active. Now look at the pure Samoan. His skin is a dark reddish brown, smooth and soft; his hair, though naturally black and copious, is coarse, seldom wavy, generally straight. He is almost beardless, and abhors a hairy chin. His stature is herculean, his limbs well rounded, his figure symmetrical, his manner quiet and confiding, his action strikingly graceful, his eye soft and subdued; his movements lack energy and quickness. Compare, further, the profile of the Tongan or Samoan with that of the Fijian," and it is by no means prominent.

These descriptions almost coincide with those of the Papuan and Malay types given as follows by Mr. Wallace. He says, of the many civilised and savage tribes of Malays, "the colour of all is a light reddish brown, with more or less of an olive tinge, not varying in any important degree over an extent of country as large as all Southern Europe. The hair is equally constant, being invariably black and straight, and of a rather coarse texture, so that any lighter tint, or any wave or curl in it, is an almost certain proof of the admixture of some foreign blood. The face is nearly destitute of beard, and the breast and limbs are free from hair. The stature is tolerably equal, and is always considerably below that of the average European. The body is robust, the breast well developed, the feet small, thick, and short; the hands small, and rather delicate. The face is a little broad, and inclined to be flat; the forehead is rather rounded, the brows rather low, the eyes black and very slightly oblique; the nose is rather small, not prominent, but straight and well shaped; the apex a little rounded, the nostrils broad and slightly exposed; the cheek-bones are rather prominent, the mouth large, the lips broad and well cut, but not protruding; the chin small and well formed." This is a better description of a Samoan than Mr. Pritchard's, although written by Mr. Wallace of a Malay, particularly as regards the hands and feet and the features of the face. The only errors are in the stature and the hair. The Samoan is herculean, over, not under, the European average, and his hair is seldom lank, generally wavy. His further account of the Malay is true also of the Samoan:—"The Malay is impassive, he is not demonstrative. Children and women are timid. When alone the Malay is taciturn; when several are paddling in a canoe, they occasionally chant a monotonous and plaintive song. Practical joking is utterly repugnant to his disposition; for he is particularly sensitive to breaches of etiquette. The higher class Malays are exceedingly polite, and have all the quiet ease and dignity of the best-bred Europeans." All which are Samoan characteristics.

The other great race of the Malay Archipelago he thus describes:—"The typical Papuan race is in many respects the opposite of the Malay. The colour of the body is a deep sooty-brown, or black, sometimes approaching, but never quite equaling, the negro. It varies in tint more than the Malay. The hair is hard, dry, and frizzly, growing in little tufts or curls, which grow out to a considerable length, forming the compact frizzly mop which is the Papuan's pride and glory. The face is adorned with a beard of the same frizzly nature as the hair. The arms, legs, and breast are also more or less clothed with a hair of a similar nature. In stature the Papuan decidedly surpasses the Malay, and is equal, or even superior, to the average of Europeans. The legs are long and thin, and the hands and feet longer than in the Malays. The face is somewhat elongated; the nose is large, rather arched, and high; the mouth is large and protuberant. He is impulsive and demonstrative in speech and action. His emotions and passions express themselves in shouts and laughter, in yells and frantic leapings. Women and children take their share in every discussion." Such is a pure Fijian also; he must therefore be a Papuan. But all Papuans are not in perfect conformity with that description, for Mr. Earl says:—"There are considerable differences in the stature of Papuans. Within a space of a hundred miles on the south-east coast of New Guinea, the stature varies from that of the finer races of Europeans to that of people who would be called pigmies." Mr. Wallace tells of another, the people of Ceram and North Gilolo, whom he thinks "quite distinct from the Malays, and almost equally so from the Papuans. They are tall and well-made, with Papuan features and curly hair; they are bearded and hairy-limbed, but quite as light in colour as Malays."

All these types exist in the South Sea, and gradations between each; but all are divisible in two types, including some like the people of Ceram, who are also Papuans. Mr. Wallace speaks of *Afuros* as a race, but that is generally supposed to be a Portuguese word applied to Pagans in the Malay Archipelago—that is, natives not converted to Mahomedanism. Mr. Earl says the peculiarity of all Papuan races is their frizzled hair. The word *papua* is Malay for *frizzly*, and correctly describes the habit of the hair all those Papuans have so much of. This habit of curling up arises from the form of the filament being flattish instead of round; it is *eccentrically elliptical* in section, both in the beard and on the head. All Papuans have the hairs of their heads and beards oval instead of round; this makes it curl in the manner peculiar to it; and, as this oval hair seems to be a persistent mark of Papuan blood, wherever we find curly or

frizzly or very wavy hair, or, indeed, Mr. Wallace says, any but straight lank hair, in this part of the world, we may attribute it to Papuan blood.

The races inhabiting nearly every isle from Papua or New Guinea, to the Windward Isles of the Fiji group, are Papuans. They vary much in stature, colour, features, limbs, and even in hair; but they all have the black, frizzly, Papuan hair, and with it most of the fierce Papuan character. But beyond Fiji, south and east, besides north of the equator, all are decidedly of the Malay type, and might be Malays but that they have a totally different language. These two families seem to have colonised the Pacific. Probably not by one, but by many migrations the Papuan came from Papua; but by one migration, possibly, the Mahori reached Samoa, whence his descendants spread north and south and east and west; and in the north these Samoans seem to have met another stream of migration by their own race, which came apparently from the Philippines.

The Papuan Migrations.

We may conclude the Papuan came first for many reasons. The Mahori is the superior, and, as we always find the superior race dispossess the inferior, so we find the Mahori displace the Papuan in the Fiji group to-day. Again, traditions in many isles tell of the present Mahori people having found a black people there when they came; and as these Mahoris, and the inhabitants of adjoining poorer isles, frequently show more resemblance to Papuans than other Mahoris, we may conclude the black first inhabitants were Papuans. There is no reason, except the superiority of race, why the Fijians could not conquer Tonga, instead of Tongans overrunning Fiji; indeed, there are good reasons in the superior numbers, greater energy, greater resources, and in the warlike ferocity of the Fijians, for the latter having long ago conquered both Tonga and Samoa. It is surprising they did not. They are quite equal in intelligence and physique, superior in energy and power; they had arms, canoes, and food quite as good, yet seemed to have always given way to the gentle Samoan stock. The very canoes in which the Tongans became the pirates throughout the Fiji and neighbouring groups were made of Fiji timber, and generally in Fiji; there was no such in Tonga or Samoa. The islands beyond Fiji, where we find most marked intermixture of Papuan traits, are Penryhn's atoll and Rarotonga group generally, and the island of Niue (or Savage I.).

There is great diversity among the islanders of the Papuan stock. Some show a small infusion of Mahori blood, caused by intermixture of stray Mahori colonies possibly; such are the

people of the Santa Cruz and Loyalty groups, and others. On the south-east peninsula of Papua itself is a Mahori colony, speaking a dialect which the natives of Rarotonga at once understand, and like all the Mahoris in feature, person, and character. On the isle of Rotuma, the natives say, a Samoan colony came and settled, although the language is more like a Papuan dialect than like Samoan. On the isle of Uea (or Halgan I.), in the Loyalty group, Admiral Erskine says: "According to tradition, the forefathers of the people composing this tribe landed only one or two generations ago, from a long voyage which they had undertaken from Uvea, or Uvia, or Uea, the modern Wallis Island. The reason assigned for their departure was the death of a son of a great chief, occasioned by the accidental falling of a hatchet on his head while asleep. The persons in fault, not daring to face the chief after the disaster, escaped to the canoes, and, abandoning themselves to the winds and waves, after a long voyage (the distance is upwards of 1,000 miles), landed on the northern coast of this island, to which they gave the name of their birthplace. The original inhabitants, driven back by the intruders, are said still to inhabit the central part of the island." In this way many islands, decidedly Papuan, may show some lighter colour, or less frizzly hair, than others purer; for these two races on one island are sure to intermix in time.

But apart from any possible blending of races so dissimilar, there are among pure Papuans a great variety of men. Captain Cook describes several Papuan tribes. The people of Malicolo, New Hebrides, he says, were "in general the most ugly, ill-proportioned people I ever saw, and in every respect different from any we had met with in this sea. They are a very dark coloured, diminutive race; with long heads, flat faces, and monkey countenances; their hair, mostly black or brown, is short and curly, but not quite so soft and woolly as that of a negro. Their beards are short, crisp, and bushy." The Tanna-men were "of a middle size, have a good shape, and tolerable features. Their colour is very dark; their hair is very curly and crisp, and somewhat woolly." The New Caledonians he found "a strong, robust, active, well-made people, courteous and friendly, and not in the least addicted to pilfering, which is more than can be said of any other nation in this sea." "They are nearly of the same colour as the people of Tanna, but have better features, more agreeable countenances, and are a much stouter race, a few being seen who measured 6 feet 2 inches. I observed some who had thick lips, flat noses, and full cheeks, and in some degree the feature and look of a negro. Their hair and beards are in general black, and the former is very much frizzled."

Captain Cheyne says of the natives of Lifri, one of the

Loyalty group: "The natives are about the middle size, and exhibit a great variety of figure. Their complexion is that of a chocolate colour. Their hair is frizzled; and besides the long bushy beards and whiskers worn by many, they have a great quantity of hair on their bodies." He says of the natives of Uea, visited by Admiral Erskine, "their complexion lies between that of the black and the copper coloured races, although instances of both extremes are met with, which would lead us to suppose that some of them were descended from two different stocks." "Occasionally we met with strongly marked negro characteristics, but still more frequently with a Jewish cast of feature, while every now and then a face presented itself which struck me as being perfectly Malayan."

The differences are not only numerous and striking among all these Papuan tribes, but often the contrasts are close together, of adjacent isles. Among the Solomon Islands, the San Christoval natives are short, generally black, sometimes brown, with woolly or wavy hair; at Ysabel they are short and slight, brown, with wavy hair. In some of the New Hebrides they are tall, black, and woolly-headed; but on the island of Mailava, fifteen miles distant, north of the New Hebrides, we find the Banks Islanders totally different. They are a short, plump, quiet race; black, woolly-headed, nose not very flat nor lips very thick, limbs round, features small. They are very quiet. Banks boys are the best nurses and house servants in Fiji. A New Hebrides boy is as good as any for rough work, useless for anything quiet or gentle. The wilder the imported labourer is, the better for field work, as a rule. There is none like a tall, black, fierce cannibal; your graceful Mahori is of no use. And among Mahoris, the darker his colour, the more Papuan there is in him, the better labourer he is. A Miré boy, a Rarotongan, sometimes a New Zealander or a Hawaiian, may do a little work, especially as sailors. On the beach at Papété, Paumotu boys work, and at Upia, Rarotongans; but very few Tahitians or Samoans. Tongans are numerous in Fiji, but they never work; and as for Samoans, the planters, who have tried them, say they are too conceited, "they are all chiefs."

But however varied the tribes may be, they are all referable to one or other of the two stocks—Papuan or Mahori. Mr. Wallace mentions another, the people of the Andaman Islands, as being represented in the Archipelago, but they have no tribe approaching them in this region, unless the Australians may. The Andaman Islanders are described as of excessively low intelligence, devoid of energy, slight in frame, black, woolly, flat-nosed, thick-lipped, and having miserable heads; all descriptive of the aborigines of Australia. This, or a cognate race,

may have extended south to Papua and adjacent islands, and may have disappeared before Papuans, as those did before the Mahoris farther south, and as Malays did before Hindus in Java, Australia being their last seat.

The darker complexion of the natives of some isles cannot be taken as a proof of Papuan blood, nor of any intermixture with Mahori. For in Samoa, Tonga, Tahiti, in the Marquesas and other groups, especially when there is plenty of food and little labour, the natives prize the beauty of their women, and their ideas of beauty are much like our own. They esteem a fair complexion, therefore the women study to keep in the shade, in order to improve their complexion, and they succeed to a wonderful extent. There are many women in these isles quite as fair as a Roman peasant, some fairer, and chiefs are generally lighter than the rest of the people. On poorer isles again, particularly on coral atolls, where most food is obtained on the reef, exposure to the sun deepens the colour. Nor must we be surprised to find customs, which we may consider Papuan, among any or all Mahoris; for having lived in Samoa for generations, in communication with the neighbouring Fijis, such customs may have been borrowed thence. Tradition, both in Samoa and Tonga, agree that the custom of tattooing was introduced from Fiji, and possibly others, such as wood-carving, may have been similarly acquired in Samoa, before the Mahoris migrated farther throughout the South Sea.

Beyond the pure Papuans of Fiji, we find among Mahori tribes traces of the Papuan blood and character in many isles; first in Niuë, Cook's Savage Island, 700 miles east of Fiji, 300 miles east of Tonga. The first white man who had any intercourse with the natives of Niuë was John Williams, the pioneer missionary, and he thus describes the first native he saw:—"His appearance was truly terrific. He was tall, cheek-bones prominent, countenance most forbidding; and his beard, plaited and twisted together, hung from his mouth like so many rats' tails. On reaching the deck, he was most frantic, leaping about from place to place, and using the most vociferous gesticulations at everything he saw." That was a Papuan. Cook describes a man at Samoa as having his hair twisted into plaits, "like whipcord," and that may be seen in Samoa now. Yet the natives of Niuë say they came from Samoa, they speak that dialect very purely, and have Samoan ideas and customs. But, they say, when they came to Niuë, they found some black people there. We may, from the description of this man above, conclude that he was of that earlier race, and he is Papuan in his appearance and manner, quite unlike a Samoan.

Farther from Fiji, 1,500 miles E.N.E., or 900 miles N.E. of

Niuë, there is a colony of Papuans only slightly intermixed apparently with Mahoris. This is at Penryhn's Isle, a poor atoll, having a population of some 300 souls. They are tall, dark brown, have wavy hair, sometimes frizzled into mops, prominent nose and brows, lighter limbs and larger feet than Mahoris, and show in their manners even more of the Papuan than in their appearance. In Penryhn's, the whole population, men, women, and children, quarrel and wrangle the whole night long. They must fish for food, or dive for pearl shell all day; they come home by sunset, eat, and begin discussing matters. They soon quarrel, the women join, they wrangle and storm, the children even join, and continue this all night, but never fight. It all ends in nothing, they never fight, but bluster and shout, and scream night after night. This again is quite Papuan, a Mahori never loses his dignity in this way.

South of Penryhn's 700 miles, and as far east by south of Niuë, is Rarotonga. The natives here have the most distinct traditions of their migrations from Samoa, and they say they found a race of black people here on their arrival. Some say they killed those people, others say they lived with them; probably they did both, killed the men and took the women. The present Rarotongans are darker, have more marked features, much more energy, and also more wavy hair than Samoans, showing an approach to the Papuan. And the Rarotongans have always had a knowledge of Penryhn's and other neighbouring isles, they class them all as *Tongareva*; so it is possible Penryhn's may have been the refuge of Papuans expelled from Rarotonga by these Mahori settlers, for such a poor atoll is not likely to have been inhabited as long as the fertile Rarotonga was not well peopled.

South of Rarotonga is Mangaia, another outpost of Papuan blood. The Mangaians used to be fierce cannibals and systematic man-hunters forty years ago. They are dark brown; have wavy, sometimes possibly frizzly, hair; beards; more prominent features than Rarotongans, and wilder manners. In many other isles east of this there is a strong Papuan element. South-east of Tahiti the Paumotus show some evidence of a population having been there prior to the Mahori occupation. Captain Beechey remarked this as one instance of the fact, that inferior isles have generally an inferior and darker people. But both may arise from the poverty and the exposure the people are subject to. In the Paumotus, however, there were a number of words not traceable to any Mahori dialect.

These are the limits of the Papuan. We have thus found him in possession of Fiji, and all the isles from that to Papua and Torres Straits, holding many archipelagoes in what may be

called the Papuan Sea; only trespassed upon by one strong colony of Mahoris on the south-eastern portion of Papua, and by some waifs and strays of Mahoris in Rotuma, Uea, and possibly on the Santaling and other islands. While beyond Fiji we find traces of him, in the approach some Mahori colonies make to his appearance and to his character, in Niuë, Penryhn's, Rarotonga, Mangaia, the Paumotus, and a few more remote isles. And having traditions of the Mahori occupations of those isles, without any record of later arrivals, and with mention of a black inferior people having preceded the Mahori occupations, we are led to believe that the Papuan was the first holder of these isles.

The Mahori Migrations.

Before tracing the Mahori into the South Sea, let us collect the scattered tribes to the point of departure, whence they colonised all this ocean, and trace their emigrations and settlements by the traditions of various islands, the resemblance of each to one central tribe, and other collateral evidence; weighing contrary theories and difficulties against traditions and facts. Then from tradition again, supported by many coincidences of custom and great similarity of appearance, we will follow them back to the Malay Archipelago, and find that, although not Malays, the Mahoris are a kindred race, and of recent departure from that neighbourhood.

Savaii is the home of all tradition in the South Sea of Mahoris. *Savaii* is the largest of the Samoan islands. Adjacent to this is the Tonga group, so near that any people colonising Samoa, being a maritime people, would know Tonga from the first, and may have settled both simultaneously. But there are no traditions of any migrations from Tonga, all are from Samoa; and many customs in Tonga are acknowledged to be from Samoa. Mariner, in his admirable account of Tonga, describes dances from Samoa, and chants the words of which were not understood, although repeated by one generation from the preceding, by Tongans, but supposed to be Samoan. Except that the Tongan is now so much intermixed with the Fijian blood, it may be considered Samoan.

About 300 miles S. by E. of Samoa is Niuë, and here is a Samoan colony. The people themselves say so, speaking an almost pure Samoan dialect, having the same appearance and customs as Samoans, only varied by their change from a very rich to a very poor island. This colony found previous inhabitants, in all likelihood Papuans, and from intermixture with these there are many curly or wavy heads of hair in Niuë; the land is poor, the people have to work hard, so they are

darker, more wiry, more active, less magnificent in physique, and less luxurious than the Samoan; yet they are much more like Samoans than any other islanders.

North of Samoa a chain of groups and islands extends to the Equator, all poor coral atolls, some miserably starved by droughts, exceptions to the rich isles of the South Sea, and contrasts to rich Samoa. They have little in the best of these isles; coconuts and pandanus, sometimes with a little taro laboriously cultivated in pits several feet deep, and by much care a little bread fruit in exceptionally favoured spots. Due north of Samoa, 300 miles, is the Tokelau or Union group, and of these people Wilkes says: "Their canoes, and the decorations on them, with their paddles, and the shape of their blades, are Samoan, whom the people very much resemble, speaking an allied dialect," which his Samoans understood. The identity of the shape of the paddle is a proof of its recent introduction from Samoa, probably brought by themselves at first, for there is, perhaps, nothing in which groups and isles differ from each other so much as in this simple contrivance, each has a peculiar size and shape of paddle, adapted to their native wood, peculiar canoe, and kind of navigation. The timber of Tokelau, being only cocoa palms, is quite different from what Samoans use for paddles; this coincidence, their proximity and great resemblance to Samoans, give strong proof of their migration recently from Samoa.

About 600 miles N.W. of Samoa is the Ellice group. The people here, again, speak a dialect resembling Samoan, more than any other, and are themselves in appearance very like that people. But a most decisive proof of their history was recently obtained by Dr. G. A. Turner while visiting the missions of the group. He was shown, and he ultimately obtained, a spear or staff, which their orators held while speaking, a Samoan custom indicating the holder's right to speak; this staff was very ancient, and the greatest treasure of their heralds and genealogists; they said they brought it with them from Samoa, and named the valley where they came from thirty generations back. The staff was decayed or worm-eaten, and bound together by splints and sumit. Dr. Turner took it to Samoa, found that it was made of Samoan timber, visited the valley they named, and discovered a tradition there of a large party having gone to sea exploring, and never returning.

North and west of the Ellice are the Kingsmill or Gilbert Islands, extending in a long-linked chain to Makin, 1,500 miles N.W. of Samoa. These isles are all of the same people, trying to live in the same way as Samoans. Their poor coral beaches give very little food, the reefs are their best friends;

but they cultivate assiduously some plants quite foreign to such a soil and climate, plants which would at once disappear if left to the care of natives—these are Taro and Breadfruit. Now, this breadfruit is one of the Samoan species, and Wilkes says: "Of all the native accounts of the peopling of the groups of the vast Pacific, that of the Kingsmill group bears the strongest impress of truth and historical probability. What adds to the probability of this story, is the fact, that it is almost the only tradition these islanders have. This account states, that the first inhabitants arrived in two canoes from *Baneba*, an island which they say lies to the S.W., and whence they had escaped during a civil war. After they had arrived, and had begun a settlement, two other canoes happened to arrive from an island to the S.E., which they called *Amoi*. The natives in the last canoes were lighter and better looking than their predecessors, and spoke a different language. For one or two generations the two races lived in harmony; but the *Baneba* people, coveting the wives of the people of *Amoi*, difficulties arose, which ended in the *Amoi* men being put to death by the people of *Baneba*, and the latter taking possession of the women. From these Samoans all the Kingsmill natives are descended. The breadfruit is said to have been brought by the *Amoi* people, the taro by the *Baneba*." Now there is no doubt *Baneba* is Ponapi, or else an isle of the Carolines, and *Amoi* must be Samoa. Here the two waves of migration met. The one direct from its Asiatic shore, through the Philippines and Carolines; the other having swept round Samoa. Before reaching the Kingsmills from Samoa, these colonists must have seen and passed many isles, consequently, again, those isles were settled by Samoans.

The race which colonised the Carolines necessarily extended through the Marshall's. The Marshall's are the nearest land to the Sandwich Isles. But the natives of the Sandwich group at the time of their discovery knew of no other land than Tahiti. Let us follow the Hawaiians, or Sandwich Islanders, back homewards, step by step, accounting for the migrations of the various inhabitants of the several islands in so doing. In Ellis's "Polynesian Researches," still the best authority on these groups he visited, we find that the Hawaiians knew of Tahiti only, notwithstanding that Ellis himself had another theory of migrations. From his knowledge of several canoes from different groups having been carried to leeward by the trade winds, he could not conceive it possible that any native canoes could have come far from the westward against these prevailing winds; but the customs and character of the people led him to believe they came from Asia; therefore, he proposed the theory

that they had migrated along the shore of the Asiatic continent to America, colonised it, and thence travelled down the trade winds, and peopled the Pacific. But no island has been found giving any idea of such a continent or such a journey; they all point westward, none to America; and we will find ample evidence of migrations against the course of the trade winds. Ellis says of Hawaii: "The general opinions entertained by the nations, as to their origin, are either that the first inhabitants were created on the islands, descended from the gods, by whom they were first inhabited, or that they came from a country which they call Tahiti." Again, "Among many traditionary accounts of the origin of the islands and its inhabitants, one was that in former times, when there was nothing but sea, an immense bird settled on the water and laid an egg, which, soon bursting, produced the island of Hawaii. Shortly after this, a man and a woman, with a dog, a hog, and a pair of fowls, arrived in a canoe from the Society Islands," said to be Bolabola, 120 miles from Tahiti. Another account among the natives of Oáhu, states "that a number of persons arrived in a canoe from Tahiti." And Ellis concludes, "though these accounts do not prove that the Sandwich Islanders came originally from the Georgian Islands, they afford strong presumption in favour of such an opinion."

To follow them to Tahiti. Here the same fables of man's descent from gods, and of his creation from red earth, are mixed with a corruption of the Mosaic record, evidently acquired from Europeans, and very likely from the Spanish missionaries who visited them between Cook's voyages. All those fables placed the scene of creation in Raiatea, one of the Society Islands, 100 miles from Tahiti. This island, Raiatea is the cradle of all the mythology of the Eastern Pacific. Any legend of a deluge, oracle, supernatural act, or power, takes its scene in Raiatea. It was the birthplace and residence of Oro, one of the first gods of the second or human class, possibly deified heroes; Raiatea was the home, and here were the family lands of the first family in all the group; here was the celebrated *Marai*—the greatest temple in the South Pacific—and everything sacred and venerated derived some of its virtue from Raiatea. Ellis says of Raiatea, "Opoa is the most remarkable place in Raiatea; of its earth the first pair were made by Taaroa (Zeus); here Oro held his court. It was called Hawaii, and as some distant colonies are said to have proceeded from it, it was probably the place at which some of the inhabitants of the South Sea Islands arrived." One of those colonies was most likely that of the people who called the new island Hawaii. This name *Hawaii* is always used by people who have no

S, they would pronounce *Savaii* as *Havaii*, which might soon be corrupted into *Hawaii*. Having the habit of calling a new home after an old one, possibly these names of the most venerated spots in Raiatea were called after old homes. Now the names *Opoa* and *Hawaii* are remarkably like *Upolu* and *Savaii*, the two largest isles of Samoa.

M. de Bovi's (*Revue Coloniale*, 1855), who lived some time in Bolabola, the adjacent isle to Raiatea, and who was well acquainted with the neighbouring groups, says, that the people of those, the Society Isles, were well acquainted by tradition with *Hamo*a and *Tonga*, but knew nothing of the *Marquesas* and *Gambia* to windward, until told by Europeans. The people of the *Marquesas* told Captain Beechey that they came from *Havaiki*. This is evidently *Savaii* again, pronounced by a people who have no *S*, and who use the *K* frequently, a letter not found in Samoan. The New Zealander, speaking a dialect remarkably like that of the *Marquesas*, says also that he came from *Havaiki*. Neither *Marquesan* nor New Zealander may have come direct, but they appear to have called their new homes after *Savaii*, the principal island of the Samoan group. From all these traditions we find that the following groups, the *Sandwich*, *Marquesas*, and the *Society*, have been colonised by people from some *Savaii* or *Havaii*, and that while *Hawaii* and *Marquesas* knew of the *Society Isles*, these did not know anything of the former, but knew of the *Samoa Islands*, of which the principal is *Savaii*. And *Ellis*, speaking generally of the *South Sea Islands*, says, after giving several legends of man's creation, that, "Another tradition stated that the first inhabitants of the *South Sea Islands* originally came from a country in the direction of the setting sun, to which they say several names were given, though none of them are remembered by the present inhabitants."

The objections to this migration against the common trade winds are the coincidence of certain *Mahori* customs in *America*, and the facility of migrating down the prevailing winds. The *marais*, or terraced enclosures for sacred purposes, are exactly like those of *Mexico* and *Peru*; that of *Pachacama*, in *Peru*, was almost a duplicate of that at *Nukahiva*, in the *Marquesas*. The poncho of *America* is used in the *Pacific*. The peculiar drink, *kava*, is said to have been known in *Chili*. But these are no more than coincidences. The *marai* was an open space, for roofing was not required except at night, or in rain; and the *marai* was only for occasional meetings, and it was such as would suit a meeting of a large number. Naturally it was in a conspicuous place, and generally therefore elevated, especially in low islands subject to the great waves of storms and tides.

Naturally it was kept very open and clear; then the approaches to it were kept in equally scrupulous order, and it became walled, gravelled or paved, and adorned. As the marai extended over the top of an eminence, it assumed a terraced form. Again, to make the inner temple more secluded, it was raised or walled in again; so that the marai, or oratory, was the natural form a large meeting place would assume in such a climate, where worship was celebrated, sacrifices made, and relics preserved in certain sanctuaries for the purpose, and when the people had not sufficient architectural skill to roof in a building capable of accommodating so many. It was an advance upon the grove, or the column of stones, as a temple, and it was well adapted to the climate. There is no reason why similar ideas should not have arisen to other men in similar circumstances, especially in rainless Peru. It seems the most natural and first impulse to elevate any object of veneration, after enclosing and adorning it. The terraced marai shows a series of such acts, and is most likely the result of any such feelings in such a climate in any part of the world. Some such temples appear to have been at one time in Java, and the common pagoda (idol house) bears no little likeness to a marai elaborated.

The use of the poncho is also a coincidence without any doubt. This garment, if it can be called one, is merely the mat or skin of the primitive man, with a hole cut in the centre for his head, the better to cover his body. It cannot be called the invention of any people; more likely it is the discovery of most savages on earth. In regard to the kava of Chili, it does not seem to be kava at all. Heindrich Brower, 1643, at Baldivia, near 40° S. lat., says: "Here about thirty canoes came aboard the ships with some cattle, and a large quantity of *chitie*, otherwise called *cawan*, which is the liquor in use among the Chilese. They take a quantity of a root called *intie*, which they roast in the sands, or they take it unroasted. The root is chewed by the women and thrown into a large tub or vessel of water, and some other roots are added. They let it *stand a day or two, when it works like our beer.*" Again, Oliver van Noort says: "On the coast of Chili the inhabitants of the isle Mocha treated him to a drink called *cici*, similarly prepared, upon which the natives were accustomed to get intoxicated." Now kava does not intoxicate; it is purely a narcotic, and its effects on the nerves are not unlike those of hemp. Under its influence the least noise is insufferable; when a chief lay in this state it was death to man or beast who made the least noise. Kava was never fermented. It could not lie two days, nor two hours, but is drank at once, but without any roasting, or anything being added; and it is not known beyond 22° S. lat., while this *chitie* was in 40° S. New Zealanders have the name but not the plant.

Then in regard to the winds, the prevailing winds are mostly from the east, but every navigator can corroborate Cook's experience of the Society group, that he had frequently a fresh gale from the S.W. for two or three days, and sometimes, though very seldom, from the N.W. It is also well known that in October, November, and December the trade winds disappear, and as a rule S.W. winds prevail. One instance of a migration against the course of prevailing winds is as good as many. Captain Beechey picked up a canoe which had sailed from Chain Island for Tahiti, a voyage of about 100 miles west, down the trades. Two westerly gales had blown them to Banoir Island, 600 miles out of their course. On board were 26 men, 15 women, and 10 children, quite enough to form a colony, and this against prevailing winds. By such gales alone all the Paumotus and Marquesas might have been colonised from the Society Isles.

Tracing these migrations farther back, we found Raiatea, the centre of settlement and the home of Sandwich Islanders, and connected it with Samoa. Tracing others, we find Rarotonga, between Tahiti and Samoa, is also a Samoan colony. There is no difficulty in making a voyage from the Society group to Rarotonga, down the trades; and to show how, at some seasons, voyages eastward can also be made, we will instance one made by John Williams exactly from Samoa to Rarotonga, other isles, and Tahiti. Sailing from Samoa, he was at first 15 days in making Niue, 300 miles S. Here he got a westerly breeze, and ran to Rarotonga, 800 miles E. by S., in 7 days. This in a small schooner of his own building in the islands. Carrying on the same breeze, he visited Mangaia, south of Rarotonga, called at Rurutu, and thence made Tahiti, 350 miles, in 48 hours. "After the fair wind sprang up, 200 miles west of Savage Island," he says, "we sailed, in the short space of 15 days, a distance of about 1,700 or 1,800 miles to the eastward."

Like the Kingsmills, Rarotonga seems to have been colonised from two sides at once; but both parties came originally from Samoa. Two clans hold Rarotonga, the Ngati Makea and the Ngati Tangiia. Tradition says that Karika, chief of the clan Makea, came from Manua, in Samoa, 800 miles N.W., and discovered Rarotonga; that he returned to Manua, and formed an expedition to settle in Rarotonga, and sailed. Upon his arrival a second time he fell in with Tangiia, who had come from Tahiti; Karika had only warriors in his party. Tangiia had some women and children; so Tangiia yielded the supremacy to Karika, which is maintained yet. The two clans settled together amicably, but found some black people there

before them. Tangiia tradition says that they were driven from Tahiti on account of disputes about land, where Tangiia was chief of A'a; but the full tradition of this family shows they came from Samoa to Tahiti. The present Queen Makea, of Rarotonga, is twenty-ninth in descent from Karika, of Manua.

Here is the tradition of the Tangiias, as given by one of the oldest men in Rarotonga:—"Awenga was a chief who sailed amongst other lands; he was from Avaiki. He sailed to Tongatapu, and from Tongatapu to Vavau; thence he tried to return to Avaiki (300 miles N. by E.), but did not make land. He was blown about by the wind, and could see no land; but the god Rongomatom took pity on him and led him to land. He visited Tongareva (Raratonga, and neighbouring isles), thence Rimitara and Rurutu, to Tabuai, where he got fire. From Tabuai he sailed to Akaau (?) and Paumotu, and at last reached Tahiti. Here he settled on the division of land called Puna'auia. He was the ancestor of Tangiia." His voyage is quite easily explained. He was returning from the Tonga Isles home, when he met northerly winds dead ahead; they blew him far south of his course, until he got into the westerly winds which prevail south of the region of trades; and these carried him from isle to isle far south of Rarotonga, until in the Paumotus he beat up for Tahiti.

We have thus direct assurance that the Rarotongans came from Samoa, one colony having first tried to settle in Tahiti, but apparently crowded out there. We have found traditions, names, and the identity of language and customs south and east and north of Samoa, all pointing to it as the centre from which all the South Pacific was settled on these sides. We have thus made Samoa the first home of the Mahori in the South Sea, and will now try to trace him beyond Samoa. Ellis heard that they came from the west, from lands of which they had forgot the names; and in Raratonga there are traditions of such lands and such migrations.

The Rev. W. Chalmers, of Rarotonga, many years ago collected a great deal of legendary lore from the dictation of old natives, and had laid the papers aside. But lately a branch mission has been formed in Papua, to which some natives of Rarotonga were sent as teachers; for the mission on the south-east coast of Papua is among a people like the Rarotongans, and this dialect is understood by Rarotongans, not so the people farther west in Papua. One of these teachers returned to visit his native island lately, after a year's absence, having learnt something of Papua, and created great interest in his tales and adventures. But what was most surprising was that some of the old men of Rarotonga professed to know

something of Papua, and asked the teacher about places there, naming them correctly. Upon being asked, they at once said that Papua was another name for the Land of Red Feathers, frequently mentioned in their legends, and that their ancestors had once lived there. This might have all been imagination, and invention incited by the travellers' tales of their countrymen; but upon examining some of these legends formerly collected, Mr. Chalmers found Papua distinctly named, and this in a passage written from dictation of an old chief years before any mission to Papua, and before any Rarotongan could have heard of it, even as New Guinea. This passage is the beginning of a prayer, or office, the first which the priest always recited upon going on to the *marai*. Mr. Chalmers translates it:—

“ Rejoice, Rejoice, Rejoice. Sacred is this place.

Silence, Silence, Silence, keep for the God Rongomatane.

True, O Rongomatane, Rejoice we shall for the growth of the land, the growth of the land, the growth of the land. Enough.

Shout, O Foundation-land Atia, and rejoice we shall for the growth of the land, the growth, &c.

Shout, O Foundation-land Avaiki, for, &c.

Shout, O Foundation-land Itinui, for, &c.

Shout, O Foundation-land Papua, for, &c.

Shout, O Foundation-land Avaiki, for, &c.

Shout, O Foundation-land Kaporu, for, &c.

Shout, O Foundation-land Manuka, for, &c.”

The names Manuka, Kaporu, and Avaiki, are how Rarotongans now pronounce Manua, Upolu, and Savaii, islands of Samoa. But they say that the Savaii of Samoa is not the original Avaiki, it was in *Atia*. It seems useless at present conjecturing what *Atia* or *Itinui* may be, the natives know nothing of them; but the reader may be warned against thinking that *Atia* is doubtless *Asia*, for any Mahori would pronounce *Asia* as *Ahia*, except a Samoan, who could say *Asia*. It is only possible a Tahitian, who uses the *t* so frequently, might call it *Atia*.

Here is another legend of Rarotonga, also preserved and translated by Mr. Chalmers literally:—“An ancient saying whence sprung the people of Rarotonga, and of all the lands about, including Tahiti, Amoa, Tongatapu, Enea manu (Bird Land), &c. Iterangiara was the great chief of the journey from *Atia*; he was the child of Tairi-tokerau, and Vaieroa was his mother. The god Tongaiti was angry with the parents, because they had caught and eaten the eel Maoro, of the water Vaiairitengaungana. Tongaiti rained down a great rain, and the waters of the Vaiairitengaungana became much swollen. Tairi-tokerau and his wife were carried away to sea. After many adventures they made land: this was Enea Kura (Red Land), or Papua. Here they found their son Iterangiara before

them. He had made a canoe out of human bones, the bones of Vatea, and gone to sea; there he had picked up a priest, and after many adventures had also reached Enuu Kura. When they had been long on Papua the people split into two parties; one party carried off the gods, and the other party remained without any gods." The legend proceeds that the same Iterangiara discovered Samoa.

Now this is evidently more a fable than a legend. Iterangiara was the hero, who seems to have conducted many migrations which must have occupied generations and centuries; he is probably to Rarotongans what Montezuma was to ancient Mexicans, or Peter the Great to Russian peasants. His mother's name is *Vaieroa*. *Vai* signifies *water*, and *roa* signifies *tall*, or possibly *deep*. His father's name was *Tairi-tokerau*. *Tokerau* is the name of a wind, and *tairi* means *to decline*, or *down*. So that this hero, whose own name may be freely translated as *Heaven-sent*, was the child of the winds and the waves. *Tokerau* requires explanation. In Rarotonga and all groups and isles towards Tahiti it signifies west or north-west, or any wind from between W. and N. by W. In Tonga and Samoa it signifies east. In the Union group, called by natives the Tokelaus, the inhabitants worshipped Tui-Tokelau as their chief deity. Wilkes asked them if they did not worship Tangaloa, and they were horrified, and said that god was tabooed in their country. Was Tokelau, originally a personification of the Wind, next applied in different islands to different winds? Can this tabu of Tongaloa, the Zeus of the South Sea in the Union group, signify that their gods having neglected them, they were at the mercy of the winds, who kindly led them to these islands, where these people settled, and have since adored the King of the Winds?

Another proof of their migration from the west is the sacred seat in Raiatea. This was a block of wood which came, they said, from Rotuma. Williams mentions this at a period when they could not have heard of Rotuma from white men, and explains the meaning of a frequent expression of sitting on this seat as a figure for peace and festivity. Rotuma is 700 miles west of Samoa, half-way to Papua from Raiatea. Another proof is that Samoans and Tongans, from whom the Papuans of Fiji borrowed the legend, declare that their paradise, Bolutu, is in the north-west, that their ancestors came thence, and that their souls return thither on death. Spirits of the dead all take their final leave of earth from celebrated points of land, both of which are on the western extremity of the groups.

That Samoa was the first settlement of the Mahoris is shown by other facts besides all those traditions of emigrations from

it, repetitions of its principal names, and acquaintance of its position, by all the groups to windward and southward; it is shown by the appearance of the people. They are the purest type of Mahoris, comparing them with other islanders, and have those traits which Mahoris call signs of beauty. A Mahori detests hair on his body, generally used to pull it out; does not like a beard; admires a light colour and soft skin, and uses much oil; and detests a *canoe nose*, as he calls it, that is, a nose prominent or aquiline, he admires a small straight nose, rather flat at the point. All these points of Mahori beauty are found much more in Samoa than in any other group. Samoa, they say, is the land of chiefs. But they have a stronger point in their singular use of the sibilant. No other Mahoris use *s*, or such a sound. Their neighbours, the Fijians, and all other Papuans do, but Samoans could not have learnt it in Fiji, or Tongans, who have had far more intercourse with Fiji, would also have acquired it. The Samoans could not have learnt it, since they came without Tongans or others doing so also, therefore they must have brought it with them. Nor is it surprising that they and all Mahoris have such a limited language, for their islands, their wants, and their ideas are all limited. It is remarkable, too, that the New Zealanders, who, some think, left Samoa not more than 600 years ago, can have hardly lost the use of *s* when first visited by Europeans. For the Rev. Mr. Marsden, who could only have acquired native names, then unheard of, from the natives themselves, writes of the chief *Shungei* and the place *Shukianga*, names which are now always called Hongi and Hokianga.

But, although these Rarotongan legends enable us to trace Mahoris back to Papua, they are not Papuans. Besides the fact that these same legends say they only divert them for a time, we have knowledge now of a Mahori tribe being in occupation of the south-eastern extremity of that island. Rau, the Rarotongan teacher already referred to, an intelligent man, says he had no difficulty in understanding the language of these people, and he looked upon them as of his own race. But along the coast, he says, there are black men with frizzly heads, there is a separate mission to them; and in the interior there is a third race, a tall brown people, who, from his account, must be the same as the people of Ceram and North Gilolo described by Mr. Wallace. They are hunters, and only visit the coast to trade.

That this Mahori race are Malays has often been proposed. That they are extremely like Malays, particularly in Samoa, in complexion, hair, countenance, hands, and in their manners may be admitted; but they cannot be Malays, for at least one

reason. Admitting that any departure from the Samoan type has been made by the other Mahoris since their departure from Samoa, which seems to have been so; admitting that any departure from the Malayan type has been made by Samoans since their arrival in that bountiful group of islands, that the soft climate, redundant prodigality of nature, and their maritime habits, have developed the hardy, stunted Malay into the gigantic, luxurious Samoan; still one insuperable objection to Samoans having been Malays yet remains. All that is possible; but it is not possible that a people so migrating should already have a totally different language, with only a few recent Malay words.

Much has been made of these few recent Malay words. There are upwards of a dozen living tongues which have lent our language words, including the Malay and Mahori languages themselves; most of our language is of one origin; 60 per cent. of English words are of Latin origin; yet no one dares to call English a Roman language, it is essentially Teutonic. The proportion of Malay or Javanese words in Mahori is after all not worth noticing; in the dialect of New Zealand, which is as copious as any Mahori dialect, Mr. Crawford (*Ethnog. Journ.*, i.) estimates them at exactly 2 per cent., and those not words of pure Malay roots, but principally modern Malay words. In that critique upon the Mahori language Mr. Crawford made the following unanswered and conclusive remarks:—

I.—The Mahori uses the aspirate fully, placing it always before, never after, a vowel; consequently it never terminates a word or a syllable.

II.—Every Mahori word ends in a vowel, and no two consonants ever come together, a vowel or a diphthong always being interposed.

III.—The paucity of consonants and frequency of vowels is Mahori.

IV.—The Mahori has two articles, like our own.

V.—The Mahori has a single, dual, and plural number to its pronouns and of second and third persons.

VI.—The construction of the Mahori verb.

In all of these peculiarities the Malay differs. In the construction of words and of sentences the Mahori is essentially different from Malay or Javanese. "Languages," says Professor Max Müller, "however mixed in their dictionaries, can never be mixed in their grammars." Wherever the Mahoris came from, they have no Malay language, but have picked up and retained a few Malay words. Considering the Malays were the great traders of the Indian Archipelago time out of mind, it is not surprising that they gave some of their words,

particularly the cardinal numbers, to many strangers, as far as the extremity of Papua.

But if not Malays, who are Mahoris? They are a cognate race of the same Mongolian stock. Oblique eyes are common in Samoa, and in Tahiti many a Chinese labourer might be mistaken by a stranger for a native. The whole system of *tabu*, closely allied to *caste*, is quite Asiatic. The treatment of women, in forbidding them certain food, or to eat in presence of men, and in their immolation on their husbands' graves, is Asiatic. For although many people have sacrifices over graves to send the departed to the next world with his belongings, yet among races so little advanced as these islanders it is the slave, the horse, or the arms which are sent, not the wife. The Mahoris have also traces of serpent worship, and of stone worship, their monoliths having the shape always peculiar to that worship from Ceylon to Rome, and used in some islands to secure fecundity in pigs, &c. They have in Samoa a sport of pigeon-catching not unlike falconry, and all islanders were excessively fond of cock-fighting.

All these are Asiatic customs and peculiarities. They say they came from beyond Papua. They are very like Malays in appearance. We are thus led to these conclusions: that they are of some kindred race to Malays, of Mongolian stock; that they have separated from that stock as distinctly, and perhaps as early, as the Malays, and always had a distinct language; that they dwelt some time in Papua, and perhaps in other lands of the Malay Archipelago, and there learnt some new words from Malay traders; thence they migrated to Samoa, and have since colonised the South Sea, sometimes displacing Papuan settlers. We have found that on the equator, in migrating northward from Samoa, they met another branch of their own family in the Kingsmill islands, who probably travelled along the Caroline Archipelago from the Philippines, and show another exodus of the same family about the same time. There must have been a considerable people at one time in *Atia*, driven out by over-population in large numbers, or expelled by conquest; the question now is, where or what are *Atia* and *Itinui*?

JUNE 27TH, 1876.

Colonel A. LANE FOX, *President, in the Chair.*

The minutes of the previous meeting were read and confirmed.

The election of the following members was announced:—
FREDERICK JOHN HORNIMAN, Esq., F.R.G.S., F.Z.S.; DAVID
GREIG RUTHERFORD, Esq., F.R.G.S.

The following list of presents was read, and thanks ordered to be returned to the respective donors :

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From the ACADEMY.—Memoirs of the Peabody Academy of Science. Vol. I. No. 4. ; 6th Annual Report, do. The American Naturalists. Vol. V. Nos. 1 to 12. Vol. VI. Nos. 1 to 12. Vols. VII. and VIII. Nos. 2 to 12.

From the ASSOCIATION.—Proceedings of the Geologists' Association. Vol. IV. No. 7.

From the SOCIETY.—Journal of the Bombay Branch of the Royal Asiatic Society. Vol. XI. No. 32.

From the EDITOR.—Revue Scientifique. Nos. 51 and 52, 1876.

From the EDITOR.—Nature, to date.

Mr. WALHOUSE exhibited a collection of iron arrow- and spear-heads from Southern India, on which he made the following remarks :—

A DIAGRAM of forms of arrow-heads used in Africa, exhibited by Lieut. Cameron at his lecture on African Ethnology, delivered before the Institute at the School of Mines, induced me to bring forward the selection of Indian arrow-heads now on the table for the purpose of comparison. Most of the larger and broader arrow-heads are used to-day by jungle-tribes in the wilder forest-tracts under the principal mountain ranges of Southern India, the Nilagiri and Palani Hills and the western Ghauts. Four or five of the shapes closely resemble those used in Africa. The larger and heavier leaf-shaped heads, whether broad or narrow, are mostly used by the Indian jungle hunters for killing deer. These men shoot very dexterously and with great force, but do not attempt long shots, for which, indeed, their large and heavy arrows are unsuited. Their arrows are formed from strong reeds, generally over a cloth-yard long, and to us would seem very top-heavy from the size and weight of the head. Perhaps to remedy this the two feathers are large and clumsily tied on. Their bows are of bamboo, of much the same shape and quite as long as the bows of the famous English archers of old, to judge from one or two specimens of the latter preserved in the Tower. The cords are long strips of rattan. Scott says of an archer of the days of the Edwards—

Well could he hit a fallow-deer
Five hundred feet or more.

The jungle bow-men attempt no such flights, but shoot from behind trees, rocks, and bushes, lying in wait by narrow deer-paths, by water, and where they know the deer will pass close by—in fact, taking pot-shots as closely as they can. They do

not draw their bow-strings to the ear, nor hardly to the breast, nor take long aims, but twang off the arrow with extraordinary force, holding the bow rather low. Though small and meagre men, the force with which the arrows strike would satisfy one of Robin Hood's men, the shafts going almost through the bodies of the animals. Deer are their principal quarry. I have heard of their killing tigers. I do not know of their using poison.

The smaller arrow-heads exhibited are principally ancient forms, not now in use, but employed formerly in war. Those grooved along the sides, or roughened under the point, were charged with a viscous poison. There are many varieties of the form with open centres, which are said to have been peculiarly dangerous, the flesh closing into the head as badly as round a barb. The crescent-shape is common both to India and Africa, and we hear of it in Roman times; the blunt, pointless heads are said to have been used for killing birds, without drawing blood or injuring the plumage. In the days of the Rajahs, when bows and arrows were in common use, the Hindoos gave full play to their fancy in devising endless shapes of arrow-heads, some very elegant, and some fantastic, probably more formidable in appearance than execution.

The PRESIDENT, Capt. DILLON, and others, made some observations on the exhibition.

Miss BUCKLAND communicated the following note, and exhibited some human and animal remains found at Bath, 1870 :
In excavations for making a large vaulted tank, and for the foundations of the railway viaduct, within the premises of the Bath Gas Light and Coke Company, a skull has been found, imbedded in gravel and silt, at a great depth below the surface, together with several bones of animals, portions of antlers of red deer, and fragments of trees, principally the willow and oak, such as are commonly found in the substrata of the Avon Valley, and other valleys similar in geological character. In these excavations the old water-worn rock and shale, formerly the bed of the ancient course of the river, at depths of from 20 to 25 feet below, and 100 feet inland from the present bank, is exposed to view. The strata of rock (blue lias, having a south dip) are scoured off in steps, and overlaid with gravel, silt, and alluvial deposit, interspersed with shells, trees, and bones. The skull, with a small fragment of rude pottery near it, was found imbedded in this silt and gravel, within 3 ft. of the rock bottom, and about 20 ft. beneath the general surface-level of the ground. Its discovery in good preservation at such a great distance and

depth from the present channel is remarkable, and its antiquity may be inferred to be great. A careful examination of the deposits, which clearly must have been coincident, indicates the subsequent changes that have taken place in the surface, and affords data for the guidance of those who are interested in such research. The workmen engaged say that a gold bronze spear-head was found near the same spot some 30 years ago, when the present tank (which is now being deepened) was being excavated. If this be true, the relic will doubtless have been preserved, and would add still further interest to the present discovery, and serve to throw more light on the date and extent of the changes worked by the old Avon River in and around this city. The articles found are at present carefully preserved at the offices of the Gas Company.

The PRESIDENT and Mr. J. E. PRICE made some observations on the remains, which included bones of homo, bos longifrons, deer, goat, calf, &c.

Mr. Hyde Clarke then read the following paper :

NOTE ON SERPENT and SIVA WORSHIP and MYTHOLOGY in
CENTRAL AMERICA, AFRICA, and ASIA. By HYDE CLARKE.

THESE observations are not intended for a complete treatise, but merely to put on record facts so far as they have been obtained, nor is it intended to draw any absolute conclusion from them, but to indicate materials for inquiry and examination.

In the "Proceedings of the American Philosophical Society" (June and December, 1875, vol. xiv. p. 483) is an elaborate paper on "The Indian Tribes and Languages of Costa Rica," by Professor W. M. Gabb. This paper, which was read before that Society on August 20th, 1875, is most deserving of attention, as well in its anthropological treatment of the subject, as because of the relations of the tribes. It deals with tribes on which the distinguished traveller Von Scherzer obtained little information and on which Bancroft in his great work supplies imperfect matter. Thomas Belt has also visited the country. This is indeed a little book, and, besides the other information, contains copious vocabularies of the Bribri, Cabecar (2), Tiribi, Terraba, and Brunka or Boruca.

This book having come under my notice, led me to make comparisons with regard to the relations of the languages, which, as usual, proved to be with the Old World.

These Indians are living on both the Atlantic and Pacific slopes of Costa Rica, in Central America, and are rapidly diminishing and, under Spanish influence, losing their customs and language. A century ago the population was of thou-

sands, now the Changinas are nearly extinct. The Bribri and Cabecars have lessened one-half within twenty years, and now the numbers are:—

Tiribi	..	..	..	103
Uren	..	..	..	604
Bribri	..	..	..	172
Cabecar	..	..	..	128
The Valley	..	..	..	219

Altogether .. 1,226

Another hundred will cover the Changinas and outlying Cabecars.

It must not be omitted that many of these natives are very light in colour and are regarded as whites. One fear, as a consequence of impiety, is being termed black.

This remnant, these tribes of a few scores, are the keepers of knowledge, languages, and legends of the past, which their forefathers brought here thousands of years ago. Some Costa Rica natives still use stone axes set in wooden handles, and those under notice in language belong to the stone age.

The languages collected by Mr. Gabb each possess a vocabulary, which he estimates at between fifteen hundred and two thousand words, a larger number than is vulgarly supposed to be used by savages. The several languages, although differing, are shown by Mr. Gabb to be mutually connected on philological examination, and the further evidence obtained by me confirms this.

As the Bribri is one ground on which the mythological observations rest, it is desirable to enter upon the question of its relations. These could be most readily effected with the African languages of Kœlle's "*Polyglotta Africana*," as that work gives more words of culture than the Indian collections of Dr. Hunter, Sir George Campbell, and Colonel Dalton. Indeed, in the present advance of the studies of culture, the Indian vocabularies founded on Brown's basis are by no means calculated to afford results. They contain words of little value in this respect and omit those that are typical. We want much new comparative vocabularies, which will deal less with grammatical points, and provide for names of animals, weapons, tools, &c.

In my comparisons much help was obtained from Mr. Gabb, for in his vocabularies he has carried out a very useful work, in registering the composition and meanings of some of the words. This has been done in some of the Australian vocabularies, but is generally neglected.

It is, however, a process of great importance, and is the

foundation for psychological philology, an important branch of anthropology, which is now growing up in strength, but is little appreciated by men of science. Dr. E. B. Tylor, so far as he comprehends philology in his treatises on culture, has collected many useful observations. It is when we learn the thought which governed the application of a word that we know how the human mind operated in the prehistoric epoch, and we are thus building up a history of the human mind. This is indispensable for understanding the beginning and progress of the higher culture when we come, for example, to an epoch so remote as when, in the Mediterranean region, there were at once written monuments of Akkad, of Egyptian, and of Khita (Hamath), besides others we know not yet of, and those which must have existed among the Peruvians, the Mayas, and the Mexicans.

Into this school of psychological philology the Germans are entering. Steinthal has expressly dealt with it in his "Philology, its History and Psychology;" and again with Lazarus, in the introduction to their "Journal for Anthropological Psychology and Philology." Indeed this study has reached the stage of a journal, while in England philology in its higher forms cannot be said to have a society or a journal, and is scarcely tolerated by anthropologists, by whom psychology is little pursued. At the British Association it became a question with naturalists whether philology is a branch of science.

As an evidence of the pursuit of psychological philology in Germany a new example is that afforded by the first volume of the "Coptic Researches" of that distinguished scholar, Dr. Carl Abel, which is almost wholly devoted to the investigation of the words for Truth and Right in the Egyptian and Coptic languages. In 1859 Dr. Abel began this career by his work on "Languages as the Expression of National Thought," and in 1871 produced a remarkable treatise on the place of words in Latin construction.

The charm of Professor Max Muller's popular dealings with philology depends on his dealings with these conjoint relations of language and thought in the Aryan languages, and their application in mythology. It is not from want of learning on his part that his labours have by anthropologists been regarded rather as belonging to polite literature than to their science.

One of my objects in my labours on "Prehistoric Comparative Philology" was to illustrate this matter, in direct connection with anthropology, further than Dr. Tylor had done. There will consequently be found there a table of words which are equivalent to each other, and since then my collections have

increased. Mr. Gabb's notes enabled me at once to recognise a number of his equivalents as belonging to the prehistoric epoch, and as he gave many which were new, they afforded a good opportunity for testing them with the African.

Thus were used axe, equal to shoulder-blade; leaves of a tree for its hair, as well as leaf for tongue; comb for hair-scraper; shirt for skin; bowels for dung-snake; face for round, sun and moon; handle for knife, as the knife's sister; needle for thorn; rainbow for snake; shield for shoulder; river mouth, as we call it, being river tail.

While examining the equivalents, it appeared the words were sometimes the same in Bribri and in the African, so that a more detailed examination became needful, which showed that Bribri and its brethren distinctly belonged to the Old World.

The names of animals show this well:—

Animal Names of Costa Rica.

<i>Iguana.</i>	<i>Snake.</i>	Babuma, &c. (Afr.), nku-sho.
Cabecar, boa.	Bribri, kebe.	
„ ba.	Cabecar, kebi.	
	Kisi (Afr.), kewo.	<i>Bat.</i>
<i>Lizard.</i>	Tiribi, bgur.	Bribri, dagur.
Bute (Afr.), mboa.	Pika (Afr.), kuredi.	Aleje (Afr.), kore.
	Brunka, tebek.	
<i>Chameleon.</i>	Landoma (Afr.), abuk.	<i>Deer and Goat.</i>
Boko (Afr.), boe.	Bribri, kwa.	Bribri, siri (also arrow).
		Terraba, shuring.
<i>Frog.</i>	<i>Butterfly.</i>	Tene (Afr.), sireme.
Cabecar, bukwi.	Kano (Afr.), koowa.	Gbese (Afr.), sire.
Landoro (Afr.), gbegebe.	Krebo (Afr.), kerakue.	Kuri (India), siri.
Bribri, wem.	Tiribi, kwong-wo.	
Gbese (Afr.), wian.	Basa (Afr.), kongo.	<i>Monkey.</i>
Kamuku (Afr.), uwama		Bribri (C. Amer.), sar.
(monkey).	<i>Bird.</i>	Cabecar (C. Amer.), sar-
Bribri, koru.	Tiribi, sinwa.	matka.
Aku, &c., akere.	Kumu (Afr.), sin.	Kuri (India), sara.
Landoro (Afr.), koro	Terraba, senowa.	Japanese, saru.
(lizard).	Brunka, dutsut.	Ankaras (Afr.), sirowa.
Landoro (Afr.), koara	Bisfade (Afr.), gunsudu	Basa (Afr.), doe.
(monkey).	wasudu.	Terraba (C. Amer.), do.
Tiribi, orang.	<i>Macaw and Parrot.</i>	Tiribi (C. Amer.), duigo.
Opanda (Afr.), oranga.	Bribri, kukoug.	Aku, &c. (Afr.), edu,
Orongu (Afr.), ironge.	Cabecar, kukwa.	edo.
Bribri, koru.	Bayon, &c. (Afr.), kua-	Juku (Afr.), do.
	kot.	Bribri (C. Amer.), wib.
<i>Leopard or Tiger.</i>	Bribri, pa.	Terraba (C. Amer.), bib.
Brunka, kura.	Cabecar, pa.	Tiribi (C. Amer.), bibgo.
Kasm (Afr.), guero.	Bagba (Afr.), pakuc.	Tiribi (C. Amer.), yaigo.
Bribri, namu.	Cabecar, kwa.	Kembali (Afr.), wiame.
Nupe (Afr.), nampa.	Meto (Afr.), ekuei.	Okam (Afr.), iwig.
Bribri, dure.	Tiribi, kuskwong.	Mbarike (Afr.), abago.
Nya, Nya, Sandeh (Afr.),	Ntere (Afr.), nkushu.	Biafada (Afr.), gidegwa.
nderu (lioness).	Terraba, kishkwong.	Toronka (Afr.), go.

Toma (Afr.), koe.
Gadaba (India), gusa.
Kol (India), gye.
Garó (India), kouve.
Annám (Asia), khi.
Yerukala (India), kote.
Brunka (C. Amer.), uli.
Eki (Afr.), aile.
Igala (Afr.), nilo (chameleon).
Brunka (C. Amer.), nong.
Dumi (Nepaul), nuksu.

Dhima (India), nhoya.
Elephant—Tapir.
Bribri (C. Amer.), nai.
Cabecar (C. Amer.), nai.
Brunka, nai.
Sobo, &c. (Afr.), eni.
Wolof (Afr.), nyei.
Pulo, &c. (Afr.), niwa.
Yerukala (India), ana.
Tamil, anei.
Tiribi, so.

Ngoala (Afr.), eso, so.
Nki (Afr.), eshua.
Aleje (Afr.), esuo.
Naga (India), tsu.
Japanese, zo.

Alligator.
Tiribi (C. Amer.), ku.
Brunka (C. Amer.), kuu.
Bulom (Afr.), kiu.
Timne (Afr.), akui.
Kosi (Afr.), kuiyo.

The name for elephant is enough to mark the connection. As the immigrants had not the elephant they gave his names to his brother the tapir. Thus we find the same names from Central America to Japan. It has been before pointed out by me that there are many names for elephant, and widely spread about, as if the elephant in the prehistoric epoch was better known than in later times. The names for monkey are as widely extended; so we get those for iguana, frog, alligator, bat, deer, and macaw.

The names recognised for objects of culture include arrow, knife, bow, calabash, pot, bed, salt, house, door, skin, cotton, maize, tree, leaf, forest, drum, rope, chair, sand, smoke, coal, dew, rain, night, day.

Central America (Costa Rica).

Arrow.

Bribri, sari.
Tiribi, sure.
Bulom (Afr.), sor.
Timne (Afr.), asor.
Kol (India), sar.
Sanskrit, sara.
Brunka, tunkasa.
Vei (Afr.), tungba.
Nyamba (Afr.), tingowe.
Naga (India), takaba.
Cabecar, ukawu.
Bribri, kabut.
Ondo Aku (Afr.), akofa.
Goali (Afr.), kowi.
Nyamian (Afr.), ngowe.
Banyun (Afr.), gubande.
Limba (Afr.), kobegare.
Houssa (Afr.), kibia.
Naga (India), takaba.

Bow.

Cabecar, ukaibeta.
Koro (Afr.), buta.
Ntere (Afr.), buta.
Tiwi (Afr.), bada.

Knife.

Tiribi, sugro.
Ashantee (Afr.), sukare.
Cabecar, taberi.
Barba (Afr.), wobaru.
Pulo (Afr.), labi.

Calabash.

Bribri, koku.
Akua (Afr.), koko.
Bola (Afr.), kekanda.
Bribri, kyong.
Vei (Afr.), kungo.
Banyun (Afr.), gukonje.
Diwali (Afr.), ekanga.
Brunka, junkra.
Kamuku (Afr.), sikoara.
Barba (Afr.), karu.
Opanda (Afr.), okodo.
Marawi (Afr.), kika.
Aukaras, kagudu.
Ndob (Afr.), ko.

Pot.

Brunka, kwate.
Landoro (Afr.), kouhwe.

Krebo (Afr.), kowoya.

Bed.

Bribri, akong.
Bamom (Afr.), akon.
Bayon (Afr.), akun.
Njo (Afr.), ekun.
Tiribi, bukru.
Mende (Afr.), buku.
Cabecar, kapugru.
Opanda (Afr.), igberiku.
Gbe (Afr.), gbeko.

Door.

Bribri, shku (ku, mouth).
Toronka (Afr.), ko.
Mende (Afr.), ko.
Aku, &c. (Afr.), eku.
Musu (Nupe) (Afr.), zoko.
Kuru (Afr.), koo.
Yasgua (Afr.), nko.

House.

Bribri, &c., hu.
Tumbuktu (Afr.), hu.
Whidah (Afr.), ho.

Mahi (Afr.), huo.
Ihewe (Afr.), oa.
Boko (Afr.), ua.
Kol (India), oa.

Cotton.

Bribri, sawi.
Ashantee (Afr.), sawa.
Aku (Afr.), owu.

Skin.

Bribri, pa.
Nupese (Afr.), epa, pata.
Kumi (India), pe.
Tiribi, kwota.
Ndob (Afr.), koat, koanyu.
Cabecar, kwo.
Bribri, ikwo.
Murundo (Afr.), ngowo.
Aleje (Afr.), okue.
Tiwi (Afr.), ikuawuro.
„ kuare.

Navel.

Tiribi, tuwa.
Bribri, mowu.
Isoama, &c. (Afr.), otuwe.
Bornu (Afr.), dabu.
Bode (Afr.), sabu.
Aku, &c. (Afr.), iwo.

Leaf.

Bribri, ku (also tongue).
Isiele, &c. (Afr.), akukuo.
Gondi (India), aki.
Pulo (Afr.), hako.
Tiwi (Afr.), akoa, ika.
Kra (Afr.), koagi.
Cabecar, kargu.
Bribri, karku.
Filham (Afr.), kartoet.
Kaure (Afr.), harugo.

Forest.

Cabecar, karga.
Gbe (Afr.), kurakuli.
Filham (Afr.), karamba.
Bornu (Afr.), karaga.
Akarakura (Afr.), egor.
Tiribi, korgarui.
Bribri, kongyika.
Bode (Afr.), kunu.
Udom (Afr.), akanugbe.

Devil.

Bribri, bi.
Udom, &c. (Afr.), ngbolo.
Nupe (Afr.), abili, beli.

Maize.

Bribri, ikwo.
Cabecar, ikwo.
Nupe (Afr.), kawa.
Opanda (Afr.), agwa.
Eafen (Afr.), nkui.
Mbe (Afr.), ekui.
Brunka, kup.
Kupa (Afr.), akaba.
Landoma (Afr.), kebabu.

Tree.

Bribri, kar.
Tiribi, kor.
Toma, &c. (Afr.), guru.
Bambara (Afr.), koroma.

Drum.

Bribri, sebak.
Pulo (Afr.), бага.
Konguan (Afr.), baka.

Rope.

Bribri, tsa.
Noojin (Afr.), sei.
Pika (Afr.), tsoli.
Juku (Afr.), dsa.
Bribri, duki.
Okuloma (Afr.), digi.
Ndob (Afr.), ndek, ndik.

Chair.

Bribri, kru.
Aro (Afr.), nkoro.
Gajaga (Afr.), korondamo.

Sand.

Bribri, tsoug.
Cabecar, ksoug.
Basa (Afr.), atsikono.
Nupe (Afr.), jikana.
Bribri, chika.
Kasauj (Afr.), kisegele.
Tiribi, erasho.
Aku, &c. (Afr.), irni.

Smoke.

Tiribi, nyo.
Guresa (Afr.), nyusha.
Yula (Afr.), nyue.
Nupe (Afr.), nawu, nau.
Legba (Afr.), nyos.
Bribri, shkono.
Yala (Afr.), noala.
Basa (Afr.), inshiko.

Coal.

Cabecar, jikowo.

Ebe (Nupe) (Afr.), jikara.
Cabecar, jikowa.
Abaja (Afr.), ujekolono.

Dew.

Cabecar, moriu.
Guresha (Afr.), marulam.
Bribri, moweli.
Mose (Afr.), worodo.
Tiribi, tomboria.
Mandengo, &c. (Afr.), buru.
Adampe (Afr.), debuloku.

Rain.

Tiribi, shunyo.
Toronka (Afr.), sanyiyi.
Brunka, jo.
Mandengo, &c. (Afr.), sanjo.
Ujo (Afr.), osuo.
Goali (Nupe) (Afr.), sheogo.
Bribri, kawni.
Cabecar, kani.
Jelana (Afr.), keah.
Limba (Afr.), koyon.

Night.

Tiribi, shke.
Goali (Nupe) (Afr.), suko.
Ngola (Afr.), osoko.
Deoria Chutia (Asia), sakokoi.

Day.

Cabecar, kanyina.
Soso (Afr.), yanyina.
Brunka, daboi.
Nhalemoi (Afr.), boi-sale.

Salt.

Bribri, deje.
Undaza (Afr.), leje.
Nupe (Afr.), esa.
Adampe (Afr.), eje.

God.

Bribri, sibu.
Terraba, zubo.
Udom, &c. (Afr.), eshowo.
Nupe, &c. (Afr.), soko.
Mbofia (Afr.), juku.
Kabenda, &c. (Afr.), nzambi.
Ndob (Afr.), nzob.

leading fact in mythology. It was also found under the same conditions as idol, sacrifice, and greegree. The conformity of god and sky is a mythological fact well known in Aryan mythology, and indeed it is the basis of the common school of weather mythology, in which the phenomena of the mythologies of the whole world is dealt with in a favourite method. It is, however, a prehistoric fact, predominating Aryan and later operations, and it applies to Sibū.

In searching for the meaning of the name Sibū, reasons led me to seek in that for navel, and it will be found fully represented. Navel and belly words are intermixed. The bowel, however, takes the name of a snake, and this led me to look for snake as an equivalent. Snake is further equivalent to fish.* The rainbow is also a snake in Bribri. Thus we have a whole apparatus for the mythology of serpent worship and the powers of nature.

On examining eastward for sibo, or sowo, and nebo, many indications present themselves. Nebo or Nabo is the name of a Chaldean god (says Dr. W. Smith), a well-known deity of the Babylonians and Assyrians. In Babylonia Nebo held a prominent place from an early time, and his name forms part of the names of many kings, as Nebuchadnezzar. It is extraordinary that the population of Nebaioth, in Arabia, is found closely connected with the Sabæans.

The question arises whether the rock-monument of Niobe on Mount Sipylus, near Magnesia and Smyrna, may not have been a Nebo. The ancient writers dispute whether it was a man or a woman. The name Sipulus, I thought, was Suburu, Accad, a statue ("Prehistoric Comparative Philology"), but it may also relate to sibū. Every trace of speculation is worth following. Nebo was a mountain name in Palestine.

Seba, in Greek, signifies worship, adoration, veneration, and is worthy of notice as indicating a possible relation to the ancient worship, and with which the term Sabazios may be connected.

There was an Ethiopian god, Assabinus, that is, Assabi or Sabi. Seb, Seb-ra, or Sobok, was a god of the Egyptians, equivalent to Khronos.

Saba was a very old Arabian king. (Rev. Prof. Campbell, "The Hivites," p. 28.)

One of the Hebrew names of God is צבאות, Tsebaoth or Sebaoth. This is commonly translated Lord of hosts or armies, but it is more possibly Seba. It is to be observed that there are doubts among the Talmudists whether Sebaoth is properly a Hebrew name of God, and whether it is not profane. Turning to Zeus and Diaus, a new conjecture for their origin presents itself.

* The words also cover the phallus.

In Smith's and the other dictionaries, is to be found Sabasius or Sabazios, and the materials are most confused. He was made into Jupiter Sabazios or Dionusus Sabazios (Bacchus). Re-constructing the materials, we find Saba, an old god of Phrygia, whose worship extended over Asia and Greece. He was torn by the Titans into seven pieces. Serpents figured largely in the initiations, midnight mysteries, and processions. A golden serpent was dropped into the bosom of the initiate, falling out of the bottom of the frock. Mixed up in time with the later mythology, it was a religion of the populace, and by the more scientific was found to belong to Zeus and Dionusus. Demosthenes looked upon it as disreputable.

With these stepping-stones we come to India, and we find Siva as a member of the Hindoo Trimurti under most peculiar circumstances. He is, in most cases, co-equal with Brahma and Vishnu, and his powers and properties are intermingled with theirs. His wife is Kali. They hold their own to this day as popular gods.

Applying our material to deal with Siva or Shiva and Kali, we find not only the former name but the latter in Africa. The connections are those of Siva. Many of the Hindoo gods are decorated with snakes, for such is the inheritance of serpent-worship, but Siva is more particularly so provided.

There are two Hindoo legends of the Creation, but that most popularly depicted represents Vishnu sleeping on a serpent, Ananta, on the face of the waters, after the annihilation of a former Creation. From his navel springs a long stem ending in a lotus, and from this Brahma is born, who produces Siva. The three are, however, brothers born together. Thus the belly is the seat of creation, and from the navel proceeds the stem, which must be assimilated to the snake of the bowel. We have the conformity in this main Siva legend of the god, his wife, of the navel, and the snake. In the present state of Siva worship we have the increments of various ages and of various races, corresponding to those which in a shorter period affected Sabazios in Phrygia and Greece. We are justified in regarding Siva and Kali as a prehistoric legend, which has survived in Hindoo mythology and been dealt with by a later dominant race.

Turning back to Central America, we find in the scanty gleanings of Mr. Gabb many things very suggestive. Sibü is the one god, but he has twenty names. The people were very indignant at the proposition that there was more than one god. A distinct line is drawn between Sibü and the numerous local or individual spirits, demons, or devils and ghosts of the dead. So, too, Capt. Hay says that in Akem, in the corresponding

district in West Africa, the god is one god. This is a very remarkable feature corresponding to the cardinal doctrine of Hindoo mythology, and it is suggestive of a widely-spread doctrine in the early prehistoric epochs. The divinity is one, but he is the spirit of all nature in every form, and in every development of the operations of the natural world. Each man was a manifestation of him.

The staff of the priests is gathered with care and devotion from a mystic timber, because it is guarded by a venomous snake. A circumstance particularly noticed by Mr. Gabb is that the songs of the priests are in a peculiar language, and although most anxious to obtain information on this head, he was most unfortunately prevented.

A curious fact must not be omitted, although not immediately relevant. In Santa Domingo there are no venomous reptiles, but, says Mr. Gabb, a poisonous plant is called *kibe*, which is the same as the Bribri *kebe*, snake. Shiva or Shivatt was the Mexican god of war.

In the table of Sibu names, a few words belonging to the series are introduced, but, as a general principle, the names of the great local god of African tribes conform with navel and snake, like *sibu*.

With regard to the tree, it is good to note some points which illustrate its worship and the doctrine of Dryads. With us we talk of the arms of a tree, but in the complete notion of a tree in Africa and Central America there is the trunk, the head, the arms. The leaves figure as fingers or as tongues. In the latter relation we have the idea of the Dryads speaking. The roots, however, have their distinct meaning. In Africa they are toes (see table), in Central America the buttock of the tree. Thus the tree is a complete being on the model of a man, and animation is only a stage forward.

So as to the river. We are familiar with its heads and arms, and in the prehistoric epoch it had its heads and arms, but what we call mouths are in Bribri the buttock or rump. In the case of the river it was most easy to anticipate its possession of a life, and the stage of its worship was a sequence to be looked for.

	<i>Root.</i>	<i>Toe.</i>
Gbe (Afr.)	gbire	bie-gburo, G.
Adampe	atike	gbere, Nupe
Kasm	nade	dide, A.
Sobo	owuse	nanina, K.
Oloma	ugo	isiawo, S.
Gura	kurugulo	ikanena, O.
Boko	gesane	kieroguro, G.
Konguan	nkanok	kisa, B.
		henuraka, K.
		ekinafen, Mbarike

	Root.	Toe.
Pajade (Afr.)	pukade	pukan, Bola (Afr.), &c.
Soso (Afr.)	sankei	senkonne, Mandingo.
Tene (Afr.)	baride	berai, Gbando.
Soso (fing.) (Afr.)	bile	bulo, Mandingo (Afr.)
Koama (Afr.)	nakel	nika, Kiamba (Afr.)
Isoama (Afr.)	oboroko	ngbaroga, Ishieli (Afr.)
Yorubo	egbogi	agbalogba, Abaji.
Undaza	moakanga	moaku, Ndobu.

Toe is of course in many cases = finger.

The seat of Sibn is in the sky, in the zenith, that is, in the navel of the day, and its sphere or belly.

In Bribri, the rainbow is a snake of the sky for the day, and we may expect to find that the milky way is the snake of the night. So we witness the rainbow serving as a road for gods and their messengers, and again Watling Street or the milky way serving as their road.

As a further instance of the light which may be obtained from African sources, to illustrate the origin of mythology, a more direct example than that of Sabazios may be taken.

The mythology of Greece and Asia Minor is usually mixed together, and treated as of one type, and hence there is a difficulty in ascertaining its true relations. That of Thebes, in Bœotia, if separated from the other centres, affords materials useful for comparison.

The names of the kings of Thebes, their wives and children, form a remarkable series.

	Children.
Cadmus = Hermione.	Ino. Agave.
Athamas = Nephele.	Echion.
„ = Ino.	Phryxus. Helle.
Amphion = Niobe.	Learchus. Melikertes.
Echion = Agave.	(Palemon.)
	Pentheus.

In the Caucasus we have

Prometheus.	Deucalion.
Epimedes = Pandora.	Pyrrha.

In Phœnicia we have

Poseidon = Libya.	Agenor. Belus.
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Elsewhere we have

Herakles = Hebe.

A similarity of names is shown in

Adam = Khaveh.	Cain. Abel.
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The incidents of the Theban and allied legends have many points of similarity. The men are founders; there is a creation (Cadmus, Prometheus); a woman is created (Pandora); the

woman is the cause of evil (Ino, Pandora, Agave); nakedness and dress are referred to (Hebe, Pandora); there is a contest with serpents (Cadmus); they are subjected to exile; the son is killed and the children are unfortunate (Palæmon, and children of Niobe, Cadmus, Echion, and Libya).

In Africa the names of the women of these legends are found in some allied roots.

Khaveh, Hebe	Ewa (Ira) Rib	Egba.
Khaveh, Agave	Kafef "	Filham.
	Gafe "	Bode.
Agave	Eguha "	Yoruba, &c.
	Eguaya "	Ota.
	Agelag "	Abaja.
Khaveh	Efe "	Bini, &c.
Hebe	Aba "	Kupa, &c.

Nephele, Pandora, Niobe, and Ino, can also be distinguished. They are also names for sisters or women. Abel (Mbale) and Cain (Kana) are names given to elder and younger brothers.

Rib is the root, which is equivalent to side, and thereby to brother and sister. So, too, in Accad, *bab* signifies side, rib, and mother. Thus it is easy to conceive Eve, or Agave, being treated as the rib or side. This word *Gafa*, or *Gaba*, is also a negative, and in some instances signified night. Thus a community of idea of night or sleep, rib, and death and evil, is provided in the words as the material for legend, and with the two words for elder and younger brother, a community of legend was prefigured in prehistoric times, which could be distributed in the various regions of the earth.

DISCUSSION.

Councillor DE SCHERZER: I have listened with great interest to Mr. Hyde Clarke's able paper; the more so as I have had the good luck to explore the whole of Central America from Costa Rica to Guatemala, about 1,500 English miles, partly on foot and partly on mule's back, during nearly two years. I have visited several of the tribes which Mr. Hyde Clarke mentions in his paper, but unfortunately I never came into contact with the Tiribis and Bribis upon which Mr. Hyde Clarke's attention was especially directed. They must be a very small tribe, numbering hardly more than a hundred individuals. I saw some individuals of the Viseitas, Blancos, Valientes, Guatasos, and Talamancas, who live between the Rio Chirripo and the east coast, and also between the Rio Zent, Rio Blanco, and Boca del Toro. Most of these tribes have been baptized, but by no means converted. The Catholic missionaries of the 16th century attached much more importance to the *quantity* than to the quality of their neophytes. A Franciscan monk of that epoch, Fray Bobadilla, boasts, in one of his letters to his Superior, of having baptized in Nicaragua, within nine days, not less

than 53,000 Indians. Such a result could only have been obtained in a wholesale manner by means of a fire-engine, and could hardly have had any effect upon the mind. The Indians of the present day preserve some notion of the Catholic legend of the creation of the earth, of the first pair, of life after death, &c., but they can by no means be considered as being Christians. They live in polygamy and have two or three wives, who do all the hard work and are treated like slaves. The medicine-man or doctor plays amongst them a similar part as among the Indians on the Upper Mississippi. The Costa Rica tribes do not bury their dead immediately, but deposit the corpse, covered with palm leaves, in a palm-thatched shed (dead-house), where it remains for three years. Every year, on the day of the death of the individual, certain festivals are performed, and it is only at the end of the third year that the corpse is buried in the primitive forest. In the colder region, in the mountains, the tribes adore the sun, probably in gratitude for the beneficial effects of the heat; in the hot region along the coast they worship the sea, which yields them fishes in great abundance, their principal nourishment, and saves them from starvation. With *Sibu*, the "Great Spirit," they got only acquainted through the Catholic missionaries, who also gave them crosses (*sibu-ruka*) and rosaries (*sibu-wue*), and spoke to them of the salvator (*sibu-durke*). Although the similarity of the Central American word "*Sibu*" and the Indian god "*Siwa*" is very striking, still I think it would be going too far to deduce from this and other philological instances any affinity between the tribes in Costa Rica and the *Siwa* worshippers in India. Even the word *Sibu* has only been adopted and applied to the Great Spirit by the Catholic missionaries, whilst in India we have before us a whole well-defined system which claims in many respects as much our admiration as any other religious doctrine. They adore also a number of idols, principally in the shape of animals: eagles, bats, snakes, &c. I saw some of these idols made of gold and copper, and of such perfection that I suspect they have been brought into the country from Mexico, as their manufacture must have required much more skill than the Indian tribes of Costa Rica ever possessed. All the Indians I met in the wildernesses of Costa Rica were extremely kind and tame. They are quite uncivilised, but not savage or wild. Only of two things one must avoid to speak, in order to remain on the best terms with them, namely, of conversion and of gold-seeking. The Catholic missionaries and the Spanish adventurers, who, soon after the conquest, visited these regions have, by their religious fanaticism and their thirst for gold, committed such atrocities and outrages and brought such misery over the country that even to this very moment the few remains of Indian tribes who live a nomadic life in the mountains and on the slopes in Costa Rica, get enraged and may become formidable enemies when they are made believe that the object of the foreigner's visit is to convert them or to look after gold. To venture to trace the origin of these tribes is rather hazardous.

However, several reasons unite to speak in favour of the probability that the present Indian tribes in Central America are the descendants of the Toltecas, who, after inhabiting the plateau of Mexico in the beginning of the 11th century, migrated southwards, considerably intermixed with the wild Chichimecas.

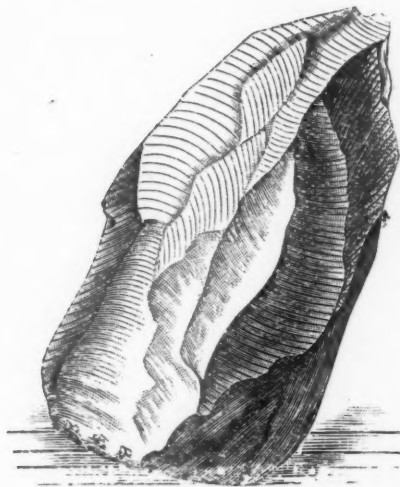
The author then read the following paper :

On FLINT CORES as IMPLEMENTS. By Dr. GILLESPIE.

THE examination of a large number of flint cores has led me to discredit the views commonly held about these structures. They have been generally looked on as the blocks left after flakes had been struck off for use, and that they were then thrown aside as refuse, nobody having appeared to recognise the fact that they are all in reality implements of very definite construction, and of so common occurrence that it is a matter of surprise that this interesting fact has not been before noticed. Some of the chief reasons that have led me to recognise the implemental nature of these cores are—1st. The fact that they follow a definite typical arrangement. 2nd. That some of them are so small that the flakes struck from them could be of little practical use as working tools. 3rd. That the numbers of cores found in any one locality are out of all proportion to the number of flakes. 4th. That immense numbers of flakes are found which bear no marks of use, and which may properly be looked on as waste. 5th. That almost all the cores found do bear undoubted marks of use.

On comparing a large number of cores from various localities, I find that they are all characterised by possessing a plain surface as a base, from which the sides, or, as it is in some cases, merely a worked face on a rough block, rise at angles varying from 60° to 80° , and that in one of the most typical forms, which is commonly known as a "hoof core," the angle was exceedingly constant at about 70° . This form, too, is generally elongated, and sometimes smoothly rounded off at one end, which would admit of its being readily held in the hand, and used probably in the manner of a plane. The edge, formed at the junction of the base and sides, almost invariably bears marks of use. In the larger cores these marks are coarser, and the edge is broken away, and crushed, as if by pounding or striking some hard substance. Some of these have been refaced, when the edge was lost, by fresh flakes being struck off; and thus a new cutting edge was made to replace the old one without a new block being required. In the smaller cores and pointed nuclei the chipping at the edge is much finer, as if they had been used as planes or scrapers for working some substance,

such as bone or horn, which requires a stronger and thicker edge than could be got by the acute angle of an ordinary flake; and further, in those conical nuclei, where great pains seem to have been taken to work them to a point, there is never any appearance of this pointed end having been used, while the lower edge bears evident marks of such use. In many of these cores the flakes are so struck off the face of the block as to leave one or more projecting points, separated by depressions (and this flat end is always at less than a right angle with the side), which give a deeply-indented outline to the aspect of the base. In some cases each end of the core is bevelled off at a working angle, in which case marks of use are easily distin-



guished on both; this, and the re-facing a block to procure a new edge, show that these ancient workmen were not deficient in some ideas of economising trouble and material.

These core-like stones differ materially from such coarse flakes which are usually recognised as "strike-a-lights." Out of 100 cores which I examined 12 were double-ended, 35 were bevelled at an angle of 70° as near as possible, 10 at 75° , 24 at 80° , 9 at 65° , 5 at 60° , &c. These were collected at various stations, viz., Wanboro', Seale, Farnham, and Postford, in Surrey; Pullboro', Sussex; at Reading in Berks; and at Yorktown and Wishmoor, in Surrey; and the cores figured in the "*Reliquiæ Aquitanicæ*," Pl. 1, figs. 1 to 5, show exactly the same characters, fig. 3 exhibiting a double-ended one. Mr. Evans states, in "*Ancient Stone Implements*," that cores were generally

thrown away as refuse, the object of the operator being to procure flakes*; but I would suggest that, if my conclusions be borne out by a more general study of worked cores, we shall have to look upon them as implements manufactured for some definite purpose, and not as mere workshop refuse. The large numbers, and the variety of localities in which these are found, whether in the caves of the Dordogne or in the resting-grounds and camps on the uplands of England, give an importance and interest to the study of these ancient tools which may prove of use when attempting to form any general notion of the culture and modes of life of the men who made and used them.

Some high authorities account for the crushing and chipping at the edge by considering these as merely the marks of abortive attempts to strike off new flakes; but flakes are struck off by selecting a projecting angle, which itself is the result of two flakes having been struck off with one edge conterminous, and the separation of the flake usually takes place with a clean edge at the point of impact; whereas the chipping, which I look on as marks of use, is, in the best examples, a fine, continuous scalloping, following the outline of the depressions as well as the projections, and conforming exactly to the use-marks on flakes and scrapers, which are undisputed in their character.

If flints were ever used as flaking instruments, I should be inclined to look on these so-called cores as the flakers; but there is little beyond surmise to help us to form a notion on the subject. As before suggested, bone, horn, and hard wood would have been the most likely materials to work on, if these instruments were used at all as chisels, planes, or scrapers. Professor Rupert Jones suggests that they may have been used as gouges to dig out canoes with. Captain Cooper King thinks they may have been of service in sharpening the charred ends of stakes, &c.; but in the present state of our knowledge it is impossible to come to any definite conclusion on the subject. These worked cores have not, I believe, been found among the drift implements, and must be referred, I think, to the earlier neolithic period.

DISCUSSION.

The PRESIDENT thought that Dr. Gillespie's view of the use to which the cores were put was worthy of attention, although he did not concur in thinking that they were in most cases constructed for the purpose of being used in planes in the way that we know from the Esquimaux the so-called scrapers were used. Dr. Gil-

*This is no doubt true of such blocks as the Presigny cores, and those of obsidian from Mexico, flint from Scinde, &c.

lespie's conjecture is based on the observation that the cores have always a flat top or base, that the facets at the side are often at an angle with this base, forming an edge at the point of junction, and that this edge is often bruised or worn. A flat top or base was, however, always formed preparatory to striking off the flakes, and all flakes show the traces of such a flat top above the bulb of percussion: the angle of the facet may have been accidental and was never a right angle, and the bruising of the edge may have been formed in striking off the flake, as is often the case when the flake is struck off with a round stone. Still he thought some of those with acute angles might have been used as Dr. Gillespie supposes, and his observations appear to throw a new light upon the matter.

Mr. PARK HARRISON and others joined in the discussion, and Dr. GILLESPIE replied.

The following paper was read by the author:

On MARKS found upon CHALK at CISSBURY. By J. PARK HARRISON, M.A.


SOON after it was established, by the scientific method of exploration adopted by Colonel Lane Fox last summer at Cissbury, that the shafts and galleries in the ditch of the camp had been excavated at a date anterior to the existing ramparts,* the question suggested itself whether the pits opened in the year 1874 by Mr. Tindale and Mr. Ernest Willett, were of the same remote age, and intended, either wholly or in part, for a similar purpose. To see if this could be ascertained by anything distinctive, I descended with the aid of a rope, down a steep slope composed of loose chalk, to a ledge about 10 feet from the bottom of Mr. Willett's pit. This ledge or stage was cut in the solid chalk rock, and ran along the east side of the pit for a length of 8 feet, and it was easy from thence to reach one of the heaps of chalk, that had accumulated to a height of about 5 feet on the floor. In its main features the pit differed from those excavated last summer, both in dimensions and plan. It was square instead of oval; or, speaking more exactly, it was of a rude rhomboidal form, a parallelogram with the corners rounded off, the principal curve being to the north-east. Galleries communicated with the central shaft through low entrances, as in the case of the pits in the ditch, but they were wider and higher, owing, perhaps, to the greater solidity of the chalk. One of the galleries, which ran for some 20 feet into the chalk rock in a north-easterly direction, returned in a line almost parallel to its first course; and at the time of my visit the upper part of the entrance to this gallery

* Though some pits inside the camp were suspected by Lord Rosehill and Canon Greenwell to have been so, no steps had been taken to ascertain the point.

was partly visible. The others were entirely concealed by chalk rubble which had been thrown in at the conclusion of the excavations.

Upon making a superficial examination of the north gallery, the only marks noticed, on this occasion, were the name of a tourist and the date "1875" slightly scratched on a projecting piece of rock immediately over the entrance. They at once caught the eye, owing to the fresh appearance of the letters and figures, contrasted with the warmer tint of the old chalk surfaces, and ancient fractures and pick-marks. It showed that some person had found his way to the floor of the pit since the summer of 1874.

The entrances to the galleries on the south, east, and west sides were, as was said before, choked up with rubble, and the *debris* extended some way into the excavations. Being without tools, all that could be done was to clear a passage just sufficient to gain access to the entrance of the east gallery whilst lying at full length on the chalk rubble; and I found it to be the best plan to enter with the feet foremost, in order the more readily to push down the heavier blocks of chalk into the chamber below, and this it was found easiest to do when lying on the left side. Gradually advancing in this way, whilst resting for a few moments, I observed on the chalk jamb immediately opposite to me, the complex figure or double character of which a *fac-simile* is appended. It would most probably have escaped notice altogether had the circumstances not been so favourable for observing it, and it certainly would not have been seen by any one standing on the floor of the pit, even if it had been clear of rubbish; nor, again, by a person entering the excavation in the usual way in such cases, on hands and knees, its position being under the spring of the chalk-soffit of the entrance, about 2 feet 6 inches from the ground. The tint of the incised lines also, a cream-yellow [with small patches of green mould here and there upon them, in common with the old surface which, it may be assumed, had grown since the pit was cleared out in 1874], would, even in a more open and exposed situation, have led in all probability to the mark being overlooked, or if noticed by the workmen would not have been recognised by them as artificial, or like anything they had before seen.*

 fairly represents the form of the character, allowance being made for the difference in size, $\frac{1}{8}$ of the original.

On returning to Colonel Lane Fox, in the ditch of the camp, to announce the discovery, I found Mr. E. Willett,

* Near the above mark, but on the exterior of the wall, I noticed two others formed like "L" and "I." But, in heaping up the chalk to prevent access to the gallery, I broke the surface in which they were cut.

who had arrived in my absence for the purpose of examining the "skeleton shaft," and learnt from him that the mark had not, so far as he was aware, been previously observed; he had not himself searched for anything of the kind, or instructed the workmen to do so. By permission of Major Wisden, it and another subsequently discovered were carefully sawn out of the chalk rock, and are at present deposited in the Museum of the Institute for inspection.

No marks, excepting such as might have been made accidentally by the strokes of a deer's-horn, had up to this time been found in any of the shafts or galleries in the ditch of the camp. Subsequently, however, some rude scoring, as mentioned in Colonel Lane Fox's Report, was discovered at the entrances of the west and south galleries of the second escarpment shaft, shortly before the close of the excavations. I was absent from Cissbury, but, on returning a day or two afterwards, found that the scratches were situated precisely in the position which the duplex character occupied in Mr. Willett's pit. None of the workmen had up to this time been made aware of its existence, and there was no evidence to lead one to suspect anyone of having fabricated the marks.*

A ladder being now on the ground, and Colonel Lane Fox at leisure to accompany me, a second descent was made into Mr. Willett's pit for the purpose of subjecting the mark to further examination, when, after a careful scrutiny, it was pronounced to have all the appearance of age. At the entrance of the north gallery, however, I noticed, shortly afterwards, upon a recessed block of chalk immediately beneath the name and date before alluded to, two other marks [16] resembling the figures 16. They appeared to have been cut with a flint; and no difference could be detected in the tone or colour of the incisions and that of the old chalk surface. This accounted for my having at first overlooked them, whilst the name and date at once caught the eye owing to their bright appearance. The discovery, owing to an imperfect knowledge of the early forms of letters, led to considerable doubt as to the antiquity of the marks, and, as a consequence, of the duplex character as well. And the doubt was not entirely removed until some weeks afterwards, when, in a description of some antiquities at Syracuse by Mr. Sayce, which appeared in the *Fortnightly Review* of the following September, mention was made of inscriptions at the entrance of rock galleries in the ditch of the fortifications, which

* The discovery of similar marks, only of a less rude character, at the entrance of two galleries, in a pit opened this autumn has removed all doubt of their genuineness.

were composed of letters that the learned linguist believed to be pre-Phœnician, and amongst them were some in the form of the Arabic 6. It had previously been ascertained to be a letter used in some of the earliest Eastern alphabets, *e.g.* Ancient Syriac, Palmyrene, and Early Coptic. Its value appears to have been "l" or "b."*

Returning to the ruder marks in the second escarpment shaft; besides the scoring and lattice pattern at the entrances of the south and west galleries, I found a double cross on the south wall of an inner chamber of the gallery which ran under the outer rampart. It had been made, apparently, with the tine of a deer's horn, and was observed immediately after the passage, by which access was obtained from the main gallery, had been cleared out. The chamber in which it was found had two square recesses, and was of unusual size, the soundness of the chalk in this part of the formation allowing a span roof, without support, of about 10 feet from wall to wall; and for the like reason it was comparatively free from chalk rubbish. Near the mark was a jagged hole, made apparently by repeated blows of a deer's horn. This at first suggested the idea that the cross lines might have been due to erratic strokes of the implement. The regular form, however, of the figure, and the even depth of the marks, appeared to me, on further consideration, to indicate design, for it showed that uniform pressure must have been used in forming them. They were also too near the low roof of the chamber for vertical blows to have been given in the requisite direction. There was nothing in the mark itself inconsistent with the belief that it might have been the work of neolithic man.

Whilst Guiles, the foreman of the labourers, was removing the chalk from the passage above alluded to, he noticed amongst the rubble a block which appeared to have been rolled, or else worn or rounded artificially by handling. Upon removing it to the light it was found to be covered with minute figures. Though very possibly natural, they may, notwithstanding, have been made use of in divination, or have been preserved for some other purpose. Unfortunately, Guiles, in forcing his way through the passage, had overlaid the piece of chalk, and, being moist, the marks upon it were injured, and some almost entirely obliterated. It led, however, incidentally, to a further discovery of considerable interest, for upon showing the piece of chalk to Mr. Ballard, when leaving Cissbury shortly afterwards, he told me that a number of rounded blocks had been met with in Mr. Tindale's pit, and that several of them had been preserved by himself and deposited at his mill-house beneath the hill.

* It occurs on the "Moabite Stone" (B.C. 900) as "l."

One, however, was then in his garden at Broadwater, and this he gave me, offering to send other specimens if sufficient interest was found to attach to them. They were all, I learnt, more or less pitted with small round holes and scored with lines which Mr. Ballard thought might be natural, *i.e.* produced perhaps by the claws of a badger, remains of that animal having been found in Mr. Tindale's pit. It will be seen presently that this explanation, as well as other attempts to account for the marks by natural causes, have proved to be insufficient.*

Having heard from Lord Rosehill† that Mr. Tindale also had collected several pieces of chalk with marks upon them, and that one was in his possession, I found, on examining it, that it was covered with figures, some of which closely resembled those found on rocks and early stone monuments in Scotland, amongst other places, in the Isle of Eday. They seemed to me partly natural and partly artificial.

The block given to me by Mr. Ballard, 7 inches long by 5 inches wide, was, as I have already said, covered with lines, many of which crossed each other, whilst others radiated from small pits, and some continued in a straight course quite across the chalk. A different pattern, composed of curved lines, occupied the sides. The block has been submitted to several eminent geologists and other persons well acquainted with natural causes that it was thought might have produced the marks in question, but they have not been accounted for. As badgers' bones had, however, been found in Mr. Tindale's pit, I adopted a suggestion made by Mr. Woodward (and subsequently by Professor Busk) that experiment should be made in a badger's den, and it was hoped that this might be conducted at the Zoological Gardens under Mr. Bartlett's directions. On applying to that gentleman he very readily undertook to test the matter. But the results were negative. Indeed, Mr. Bartlett, who had not been able to recognise in the markings anything that was peculiar to the badger, expressed from the first a decided opinion that the claws of the animal were too long and its legs too short to enable it to scratch lines of the length and straightness of those found upon the chalk block. In fact, the scratches on the sides of their dens, as I had myself observed, were all more or less curved.

On placing a dead rat under several pieces of pipe-clay, Mr. Bartlett found that the marks made by a dog in its endea-

* The block first obtained alone preserves the marks in a perfect state; all the others subsequently received were a good deal injured from having been thrown about at the mill, and little remained that was distinctive excepting the pittings and the boulder shape of the blocks.

† Lord Rosehill was good enough to send me the block, and it was shown at the meeting.

vours to reach the bait were, from his recollection of those on the chalk block, very similar to them. If any animal, therefore, made these marks, he thought it must have been a dog, and not a badger. I may mention that I have not been able, on repeating this experiment, to obtain results which, on comparison, could be considered conclusive. And there is the further difficulty that the pieces of chalk were found many feet below the surface. The pittings also would still have to be accounted for, as well as the very different character of the marks on the sides of the chalk block. The regularity of the pattern, and the remarkable way in which lines radiated from centres, would appear rather to be suggestive of design. Another cause, which at first seemed to be worth considering, namely, the possibility of the chalk when in a soft state having been thrown amongst bushes, and so impressed with natural markings, has also to be rejected, no forms at all similar to those upon the chalk blocks having been recognised as belonging to the flora of Cissbury. It should be mentioned, as regards the pit in which these blocks were found, that it differs from all others that have been excavated, being 39 feet deep, and formed like a very large funnel, of an oval shape. It is said to have been only about 5 or 6 feet in diameter at the bottom, and there were no galleries leading from it. I also learnt from one of the workmen who had been employed by Mr. Tindale that there was a basin-shaped hollow wrought in the solid chalk floor, at once suggesting the possibility of its having been a well, or rather reservoir; for, if puddled in the manner ponds in the district round Cissbury are still constructed, a certain supply of water would always have been maintained by percolation through the sides of the shaft. This pit then, like Mr. Willett's, may not be of any extreme antiquity, notwithstanding the fact that horns of *bos primigenius* were found in it. It would be easy, since the lower half only has been filled in, to clear it out again, and ascertain for certain the object which it was intended to serve. Returning to the characters in Mr. Willett's pit, doubt regarding their antiquity arises, simply from the fact that they were not noticed until more than a year after the excavation was finished. Some person, therefore, acquainted with ancient letters, might have amused himself by fabricating them. The accidental way in which they were discovered is, perhaps, no sufficient evidence that this was not so; and I should myself put most trust in the colour of the marks and the peculiar appearance that chalk acquires after the lapse of ages when sheltered from the weather. There is nothing to show that the pits opened by Mr. Willett and Mr. Tindale may not be of several centuries' later date than the nests of smaller shafts in the ditch of the camp.

It has been thought well to give a full narrative of the circumstances connected with the discovery of these marks, for future reference, in case similar forms are met with in any further excavations. Having regard to the coast on which they were found, they may, perhaps, by-and-by, serve to supply evidence of "contact," if not of descent.

Postscript. (Oct. 30.)

Since the above communication was made to the Institute, additional marks and inscribed characters have been found in a pit immediately adjoining the one opened by Mr. Willett, but apparently of earlier date. Some of the forms are of the type presented by the duplex character first discovered, *i.e.* straight lines in different combinations, \times \dagger \parallel ; but some are curved, and end in a dot or circle, \cap \times . In more than one instance the lines are arranged in couples. On one piece of chalk, which was found about 5 feet below the surface, under a seam of red clay, are four characters of an early type, $\parallel \times \parallel$. As it was thrown out from the upper part of the pit, and no marks at all similar exist, either on the chalk walls or upon any blocks found within 6 or 8 feet of the bottom of the pit, they would appear to be of a different date, contemporaneous, perhaps, with the duplex character. Lines were found at the entrances of the galleries of a less rude description than those discovered last year; they were more regular and the strokes finer. Only one gallery has as yet been cleared out; it is possible, therefore, that something may be found by-and-by that will assist in determining the date of the new pit. It differs in form from any as yet excavated, and a cave-dwelling and hearth on the floor of the shaft shows that it was occupied for some considerable time. A full description of this interesting pit will, it is hoped, be communicated to the Institute on an early occasion, and appear in the next number of the Journal.

DISCUSSION.

The PRESIDENT said: Nobody knows better, or probably so well as myself, the great attention which my colleague in the Cissbury excavations, Mr. Harrison, has devoted to the subject of this paper, and the valuable assistance which he has rendered to us throughout this inquiry, and I am very glad that the Institute should have the opportunity of hearing a description of the scorings found during the excavations from his point of view, the more so as his opinion upon the subject differs in some respects from my own, inasmuch as I cannot bring myself to feel the same confidence in their

antiquity that he does. It must be understood, in the first place, that the position in which these marks were found in Mr. Willett's pit was not by any means inaccessible to the public. Both Mr. Harrison and my son ascended and descended the shaft several times without the aid of a rope, and with a facility that I could not but admire in Mr. Harrison, who, though no longer young, is active; others might have done the same during the year that the shaft had remained open, for the purpose of examining the caves at the bottom, and, having done so, nothing could be more natural, as we all know, to an individual of the English race than to immortalise himself by scoring his name, especially upon any object or monument of antiquity, which is always considered most appropriate by the British public for the inscription of their autographs. William Penfold, whose name appears just above the marks under consideration, appears obviously to have been one of these worthies. Most of our workmen, with better right, wrote their names upon the sides of the galleries, and we ourselves inscribed ours, with the date of the excavations, as a record for future explorers. When we consider this tendency to make marks, the great facility with which they are made in chalk, and the almost entire absence of such marks, except pick marks (for such I must affirm to be the case), upon the sides of the shafts and galleries generally at the time they were first opened by us, we can only ascribe this absence of them, I think, to the fact of the original excavators having been an unlettered people. It is quite possible that such marks may have been overlooked by Mr. Willett and his men, though I think it is hardly likely. Then, if we consider the forms of the marks; the monogram, if such it is, is not that of any known letter or figure in the English language, and this may perhaps be considered an argument in favour of antiquity, but the "16" is a well-known English form. The figure "6" may be, as Mr. Harrison says, Coptic, or may be found in several ancient characters, and if found in Egypt or elsewhere it might for that reason be attributed to antique sources, but, for the same reason, having been found in Sussex, I consider it English. The facility and rapidity with which such marks are made on chalk leads me even to doubt those which we ourselves found in one, and one only, of our shafts. Mr. Harrison has very properly drawn attention to the fact that no marks, except pick marks, were discovered in any of our pits until after he had discovered these marks in the pit formerly excavated by Mr. Willett; and I think this is important, because this did not arise from their not having been looked for. I had myself been on the look-out for such marks from the first, but for obvious reasons did not tell the men to look out for them; and, moreover, after Mr. Harrison's discovery, the sides and walls of the pits previously excavated by us were re-examined carefully by him and others, and none were found anywhere except the three or four found close together in one shaft, which was the one opened immediately after Mr. Harrison's discovery. One might almost infer from this that the marks were not made until after the attention of the workmen had been drawn to the occurrence of said figures in Mr. Willett's pit. Still I am

bound to say I have no reason to distrust our workmen, indeed, I do not believe that they were made by them, they might have been made by a visitor upon a Sunday, when the tools were left in the pit, and covered up again. I certainly saw a portion of the scoring over the entrance to a gallery in No. 2 escarp shaft, uncovered by myself on the Monday morning. The face of the chalk was covered with a yellow coating of oxide of iron, and the flint flake with which the marks were made had scraped off the yellow coating, leaving the marks white. All the marks had been made with the same flint and with the same edge or point of it, the inequalities of the flint having been impressed on the grooves, and they were the same in all the grooves. We tried the experiment on an exposed face of the chalk with a flint, and found that the whole scoring need not have taken longer to make than about as many seconds as there were lines. Other marks on the entrance to the adjoining gallery had, however, to me more the appearance of antiquity, and may have been, as Mr. Harrison suggests, marks made by the excavators to denote the number of flints obtained out of it, or for some other similar purpose. Indeed, I am far from dogmatising with respect to any of them; the evidence is, I think, unreliable, and my position with regard to them may be described as *agnostic*. I think, however, that we are much indebted to Mr. Harrison for having brought the subject before us and for the able manner in which the view of their genuineness has been argued by him; and I hope that, whether genuine or not, some of the most likely ones may be recorded by means of woodcuts, so that in case of any future discovery of similar marks, now that our attention has been drawn to the subject, we may have them at hand for comparison.

Mr. PARK HARRISON, in reply, said that it was not easy to get down into Mr. Willett's pit (originally 20 feet deep) until stepping-places were made by himself in the chalk. Single letters and characters having been found in Sussex on British coins of pre-Roman date would lead one to think it probable that they were known previously; and if so, it is reasonable to suppose that they may have been cut by the priests on so tempting a material as chalk, either as charms or monograms of deities, long before the very advanced art of *coining* was acquired. There is nothing to indicate the number of centuries during which the Druids in Gaul practised writing before Cæsar recorded the fact.

The following paper was taken as read :

NOTE on the name "MEDITERRANEAN," as applied to part of the HUMAN RACE; together with the PROPOSAL of a NEW TERM in its place. By F. JEFFREY BELL, Exhibitioner of Magdalen College, Oxford.

FOLLOWING up a suggestion, half playful indeed, as I think, on the part of Professor Rolleston, made to me at the conclusion of his lectures on Ethnology, delivered in the University

Museum, at Oxford, in Michaelmas Term, 1875, I have considered the name Mediterranean, applied to some of the races of man, principally by German anthropologists. Dr. Rolleston's reference to the term reminded me of an objection which I had long felt, namely, that the epithet Mediterranean in no way did justice to the very laborious investigations of philologists, on the distribution of the Aryan languages throughout the world; and on going further into the question, put in the manner I have already indicated, I have come to certain conclusions on the matter, which I think may as well be put before those who are studying anthropology, through the medium of the Institute. I may, perhaps, be allowed to apologise for certain lacunæ and deficiencies, due to the fact of my being in *statu pupillari*; and I shall also, throughout the paper, assume the unity of the origin of the human race, not so much, indeed, because the arguments of the "polygenists" are difficult to answer, as because it would lead to a longer paper than I at present feel justified in writing, and because of no large experience in the varieties of the human race.* I may, however, be allowed to fortify myself, by a quotation from an article in the new edition of the "Encyclopædia Britannica," signed by the well-known initials E. B. T.: "On the whole, it may be stated that the doctrine of the unity of mankind now stands on a firmer basis than in previous ages."

The first objection which I shall raise ought of itself to be sufficient to convince us that we have no right to apply the term Mediterranean to the Aryan and Semitic races, together with the Caucasians and Basques, as is now so commonly done; and which was, as I understand, first used in this sense by Friedrich Müller, in the report of the voyage of the Novara (*Reise der öst: Fregatte Novara, Anthropol. Theil Abth. 3. Wien 1868*): it is this, that the name Mediterranean has been already appropriated, and that by the very famous philologist, Ewald† I cannot better describe for what races than by quoting Prof. Max Müller,‡ whom I must thank for directing me to the article, from which this quotation is taken: "The race speaking these languages inhabited the large central circle surrounded by Semitic, South Indian, Chinese, Turko-Tartarie, and Basque languages." So that it is

* I do not think that I shall be considered presumptuous in speaking thus of the polygenists; at any rate, not by those who have read Prof. Häckel's "*Schöpfungsgeschichte*," where he speaks of the *twelve* species and *thirty-six* races of man; with which one might compare his remarks on species, *Ann. Nat. Hist. June, 1873, p. 424*.

† *Ausfuhr Lehrbuch des Hebraischen Sprache, p. 17 (Göttingen 1870)*, where the note says that its author has used the term, in this sense, for thirty years.

‡ *Encyclopædia Britannica. Art. Aryan.*

clear that Müller's "Mediterranean Races" includes the Mediterranean of Ewald (Aryan of many authors), *plus* the Semites, Basques, many Caucasian races, and those called Hamitic. This is surely not justifiable. Zoologists, at any rate, do not allow the same generic names to be used in systematic zoology, however far apart in the scale the animals bearing them may be;* and anthropology, which, indeed, can hardly live without philology, is surely not justified in allowing such proceedings. Putting aside this question of nomenclature, although, in truth, it ought not to be set aside, let us pass on to consider how far the name is justifiable, by the facts of the case.

The term Mediterranean might be understood to denote the races living around the sea so called, or the races living in the centre of the earth; the latter seems to be the more usual interpretation. The advantage of it, considered on the former understanding, is, that it draws our attention to the well-known fact, that the so-called Hamitic races (the Dyssemites of many modern authors) are really connected by very close ties with the true Semites;† that is, that the nations living in the North of Africa, and bordering on the Mediterranean, are so closely allied to the Semites that the whole group might be fairly called Syro-Arabian, as has already been suggested indeed.‡ One very great objection is that it seems, in any fair sense, to leave out of notice those Indian races which are, without doubt, members of the Aryan stock, and are, as clearly, closely allied to many very distinct European races. The term, indeed, to my mind, seems to slight the excellent labours of those philologists who have demonstrated, with such admirable clearness, the primitively common origin of the Teuton, the Kelt, the Slav, the Iranian, and the "Indian." Foolish and wrong is it, at any time, to slight honest and excellent work; but most foolish of all is it for the anthropologist to slight the philologist, to whose labours he owes so much, and to whom, in all probability, he will owe so much more.

Next, with regard to geographical position—and it is only fair to deal with the latitude—they can hardly be called the middle-land races, who do not live south of the Equator (I am, of course, not speaking of modern colonists, but criticising the

* As may be instanced by the amœboid *Pelomyxa*, discovered by Dr. Greef at Bonn (allied to the unfortunate *Bathybius*, as was supposed); Dr. Greef first called it *Pelobius*, which name has long been given to an insect: it would surely be more easy to mistake two members of the *genus homo* than a protozoon and an insect!

† Cf. Farrar's *Families of Speech*, chap. iii. *Ibid.* p. 111.

‡ Compare, also, Fr. Müller (*Reise der Novara*, &c., p. 193): "Ursprünglich scheinen die hamatischen und Semitischen Sprachen eine Einheit gebildet zu haben."

word in the sense in which it is used by Prof. Hæckel, in his map of the races of man,* which represents the distribution of the fifteenth century). And again, the Turks, whom no man will allow to be of this Mediterranean race, unless some coming anthropologist shall give the name yet another meaning, live on the borders of the Mediterranean Sea, and did live there even in the fifteenth century. These objections might, perhaps, be sufficient for rejecting the term Mediterranean, as used by Fr. Müller; but it is further right to suggest some other term in its place. It may be that what will follow may afford some justification for directing the attention of the Institute to the matter of a name; and as it will, I think, be allowed that scientific names are only the expressions of scientific knowledge, it may be well to call attention to the following very important point. Important as it is, it must, I fear, be dealt with somewhat shortly, owing to my lamentable ignorance of philology. Much assistance can, as I believe, and as I have already said, be given to anthropology by philology; and it is mostly for the purpose of again drawing the attention of philologists to this matter, that I insert what follows; this, namely, is the problem—Are we justified in placing the Basques, and some of the Caucasian races, with the Aryans, or even with the “Mediterraneanese?”

I will first deal with the Caucasians; little seems to be known of them. Prof. Max Müller tells me that the dialects of the tribes now scattered in the Caucasus are neither Aryan nor Semitic, with the exception of Ossitic and Armenian, both of which are Aryan. The famous Klaproth relates, in his travels, that it was possible to pass through the mountains of the Caucasus (and here it is that most of the non-Aryan tribes are found) by knowing the language of the Tartars. Here are his exact words: “In und am Kaukasus wohnen verschiedene Tatarische Stämme, die *Dialecte einer Sprache* reden, mit deren Hülfe man dies ganze gebirge durchreisen kann.”† And it appears that the Tatars he speaks of in this passage speak a language in no way related to the Aryan. Mr. Hyde Clarke, in a paper presented to the British Association in 1872, of which I am sorry to say that I have not been able to find more than an abstract, says, very truly, that the Caucasus is “a place of passage,” not “a centre of population,” for the world.

To pass on to the Basques, whose origin has for a long time been the subject of dispute. Humboldt had entered very fully into the question; lately, as is natural, French anthropologists

* Frontispiece, vol. ii. English ed., 1875.

† Reise in der Kaukasus, &c., in 1807-8, von Julius von Klaproth 7^{ter} Abschnitt. Tatarische Sprachen: Bd. ii. p. 271. Halle and Berlin, 1814.

have devoted much attention to the matter ; a very full history of the controversy carried on by the Anthropological Society of Paris will be found in M. Bladé's very valuable book,* from which I shall quote largely in what follows. Two distinct views have been taken, and admirably supported ; between them I shall not pretend to arbitrate, but shall point out their bearings merely on the question as to how far the Basques can claim to be Aryans.

1. M. Paul Broca asserts that the Basques are dolichocephalic ; but their dolichocephaly differs from that of the other races of Europe : "Au lieu de présenter une dolicocephalie frontale, ils présentent une dolicocephalie occipitale, due à la fois au développement exagéré des lobes postérieurs du cerveau, et au peu de développement de sa région antérieure." By the conformation of the cranium, they closely resemble the negroes, save as regards their orthognathism. "Mais je me hâte d'ajouter que les Basques se distinguent à leur tour de toutes les races d'Afrique, même des plus orthognathes, par la petitesse de leur mâchoire supérieure, par le peu de développement de leurs bosses cérébelleuses, et par l'atrophie relative de leur protubérance occipitale ; ces caractères, d'ailleurs, différencient aussi les Basques des races d'Europe."

2. M. Pruner-Bey strongly opposes the conclusions, and indeed premisses of M. Broca ; he asserts strongly the brachycephaly of the Basque skull, and gives good reasons for thinking that M. Broca's skulls were dolichocephalic, on account of the crossings with other races, which, as both anthropologists allow, obtains largely to-day. M. Pruner-Bey not only asserts that the Basques cannot be descended from the Aryans, but is confident that they belong to the Mongoloid stock.

And that this is not altogether absurd, the investigations of Prince Lucien Bonaparte,† who has discovered some very striking analogies between the Basque and Finnic languages, and of M. H. de Charencey,‡ go to prove. And although there is no relation whatever, as far as modern ethnologists can see, between the "Iberians" of Spain and the "Iberians" of the Caucasus, and although the name Iberian is purely a geographical, and not an ethnographical term, as even Humboldt§ was compelled to allow—"Der name der Iberer ist nicht bloss ein ethnographischer, sondern grossentheils ein geographischer"—yet it is strange that the Greeks should have called both races

* *Etudes sur l'origine des Basques*, par M. J. F. Bladé. Paris, 1869.

† Prince Louis-Lucien Bonaparte. *Langue basque et langues finnoises*. Londres, 1862.

‡ Quoted by Bladé, p. 85 and onwards.

§ "Untersuchungen über die Urbewohner Hispaniens," p. 141. Bd. ii. *Gesammelte Werke*. Berlin, 1841.

Iberians; and the more remarkable, since in the Caucasus so large a portion is inhabited by "Allophyllian races," as may easily be seen by reference to the Philological Map of Europe, in Mr. Farrar's "Families of Speech."

If I now just add, that philologists find a close relationship between the Basque language and those of the aborigines of America—both are "Polysynthetic"—I think I shall have shown, although, indeed, it has been shown over and over again, that neither anthropologists nor philologists are entitled to put, in any close connection, the Aryans and the Basques. Nor is there any proof of the relationship of the Basques with the Semites. Of the early wide distribution of the Basques, or their kin, over Europe, I need not speak. If, then, the Basques and the non-Aryan-speaking Caucasian races are to be excluded from the group Mediterranean, there is left in it only the Aryans and Semites of the philologists; for them, as I have already shown in the earlier part of my paper, the name Mediterranean cannot be justly used. Here, perhaps, I might conclude, following manifold examples, for the easier, because destructive, portion of my task is done; the more difficult remains, to grapple with the constructive; and here the question is, what name can be given to the two large groups of races, naturally connected together, the Aryans and the Semites of philologists? Are they, or are they not, more closely allied to one another than to any other races known to the ethnologist? Philology distinctly says that they are, in the person of one of its most gifted and laborious students;* ethnology has never separated them. Granting then this, it remains now only to find them a common name.

To this question let us now address ourselves:—

1. No name which regards their intellectual qualities can be found; progressive many Semites are not, as has been eloquently said,† "Had the Semite alone appeared, man might have been sunk in Oriental stagnation—noble, indeed, in his moral bearings, but too simply quiescent and introspective—without science, without inventiveness, without inquiry, without intellectual breath and catholicity, without that physical energy and those 'wrestling thews' that throw the world." Surely the possession of these form the very conditions of progress. Among these two races alone, indeed, is the missionary spirit to be found, but it is not common to them all. Nor are they alone progressive, the Chinese were once so, and the friends of humanity are gladdened, in these days, to see this very spirit in the Japanese.

* Prof. Max Müller, "Science of Language," i. 380.

† Rev. F. W. Farrar, "Families of Speech," p. 186.

2. Westerly drifting many are, but they have also gone eastward; and the Turks, as Mr. Howorth has shown, are also so.*

3. Their physical characters are hardly distinctive; they shade into nearly every other group of the human race.

4. Language, then, alone remains, and this does seem to be absolutely distinctive; the areas of the Semitic and the Aryan languages are distinctly marked.

I propose, therefore, the name Aryo-Semitic for the group; in addition to the reasons produced by the above "exhaustive treatment," I would give the following:—

1. No characteristic of man stands out so prominently as language; as Häckel† says, "The highest authorities in comparative philology justly see in the development of human speech the most important process which distinguishes man from his animal ancestors"; and again (p. 307), "Comparative philology seems especially to be becoming an authority in this matter"—that is, the classification of the races of man. It is quite in accordance with the principles of classification to use as a distinctive name, one which expresses variations in character common to, and distinctive of, a group.

2. There is much truth in Schleicher's remark that there are as many primitive languages as races; it has been shown that the Aryan and Semitic languages had a common origin, and, therefore, on Schleicher's principle the races were also primitively one.

3. The highest authorities in philology use the term Aryan for all the members of the Græco-Italo-Keltic, Slavo-Letto-Teutonic, Indic, and Iranian families, and do not, as Häckel and others, confine it to the two latter.

4. Names of classes and families must not do more than represent our knowledge at a given time; all our knowledge of the distinctive characters of the Aryans and Semites has been gained by philology.

5. We thus cut off all chances of error as to the Basque and Caucasian races. Many anthropologists insist on physical characters to the exclusion of philological, but such a course is suicidal for the anthropologist; while he too often finds only remnants vague, uncertain, and without any history, the philologist, in the majority of facts which he discovers, has means of comparison and monuments, which have lasted through ages unchanged and untarnished.

Many philologists, indeed, insist on the necessity of classifying languages and blood relationships in a different manner;

* Journ. Ethnol. Soc., ii. p. 472. Cf. also M. Muller, op. cit. i. p. 346.

† Op. cit. ii. p. 301.

but just as truth elsewhere is one, so, surely, is it in the case of man; small sections of families may here and there change their language, but the cases are exceptional, and often, thanks to the labours of the philologist, also explicable.

NOVEMBER 14TH, 1876.

Colonel LANE FOX, F.R.S., *President, in the Chair.*

The minutes of the previous meeting were read and confirmed.
Two new members were announced.

The list of presents to the Library was announced, and thanks ordered to be returned to the donors for the same.

FOR THE LIBRARY.

- From the CLUB.—Proceedings of the Berwickshire Naturalists' Field Club, Sept., 1875.
- From the SOCIETY.—Proceedings of the Society of Antiquaries of London. Vol. VI. Nos. 5 and 6.
- From the SOCIETY.—Proceedings of the Philosophical Society of Glasgow. Vol. X. No. 1.
- From the SOCIETY.—Proceedings of the Boston Society of Natural History. Vol. XVII. Nos. 1—4; Occasional Papers of do.; Memoirs, do.
- From the AUTHOR.—Report upon Geographical Exploration, &c., U. S. America. By Lieut. G. M. Wheeler.
- From the INSTITUTE.—The Canadian Institute. Vol. XV. No. 11.
- From the EDITOR.—Materiaux pour l'Histoire de l'Homme, June to Sept., 1876.
- From the SOCIETY.—Proceedings of the Royal Society. Vol. XXIV. No. 170.; Vol. XXV. Nos. 171—3.
- From the ASSOCIATION.—The Journal of Royal Historical and Archæological Association of Ireland. Vol. III. No. 24.
- From the EDITOR.—Archiv für Anthropologie. Newr. Band. Erstes Viertel. 1876.
- From the INSTITUTE.—Transactions of the New Zealand Institute. Vols. 1, 2, 3, 4, 7, and 8.
- From the AUTHOR.—Report of the U. S. Geological Survey of Territories. Vols. IX. and X. 4to. By Professor F. V. Hayden. Bulletin, do. Vol. XI. No. 4.
- From the INSTITUTE.—Proceedings of the Royal Colonial Institute. Vol. VII.
- From the INSTITUTION.—Journal of the Royal United Service Institution. Vol. XIX. No. 84. Vol. XX. Nos. 86 and 87.
- From the ASSOCIATION.—Journal of the East India Association. Vol. IX. No. 5.
- From the SOCIETY.—Proceedings of the Royal Geographical Society. Vol. XX. No. 6.

- From the SOCIETY.—Transactions of the Asiatic Society of Japan. Vol. III. Part 2.
- From the SOCIETY.—Journal of the Asiatic Society of Bengal. Part I. No. 1; Part II. Nos. 1—3; Proceedings, do., Nos. 1—7, 1876.
- From the ACADEMY.—Bulletin de de l'Académie Impériale des Sciences de St. Petersburg. Vol. XXI. No. 5; Vol. XXII. Nos. 1 and 2.
- From the SOCIETY.—Mittheilungen der Anthropologischen Gesellschaft in Wien. Vol. VI. Nos. 1—4.
- From the SOCIETY.—Jahrbuch der K. K. Geologischen Reichsanstalt. Vol. XXVI. Nos. 1 and 2; Verhandlungen, do., Nos. 2—10.
- From the SOCIETY.—Mittheilungen der K. K. Geographischen Gesellschaft in Wien, 1875.
- From the SOCIETY.—Bulletin de la Société Imperiale des Naturalists de Moscow. No. 1, 1876.
- From the ANTHROPOLOGICAL SOCIETY OF SPAIN.—Revista de Antropologia. Vol. II. No. 2, 1876.
- From the MANX SOCIETY.—Bibliotheca Monensis.
- From the ACADEMY.—Paunetieck Akademii Unsiejelno'sei, W. Krakowie.
- From the SOCIETY.—Journal of the Bombay Branch of the Royal Asiatic Society. Vol. XI. No. 33.
- From the EDITOR.—Revue Scientifique. Nos. 1—20, 1876.
- From the AUTHOR.—Catalogue des Instruments Anthropologiques. By M. L. Mathieu.
- From the SOCIETY.—Bulletin de la Société d'Anthropologie de Paris. Vol. IV. No. 1, 1869; Vol. IX. No. 1, 1874.
- From the CONGRESS.—Congrès International d'Anthropologie et d'Archéologie Préhistoriques Session de Stockholm, 1874; Bibliographie, do.
- From the AUTHOR.—Medical Statistics of the Provost-Marshal General's Bureau. 2 Vols. 4to. By Dr. J. H. Baxter, M.D.
- From the SOCIETY.—Transactions of the Royal Society of Literature. Vol. XI. Part 2.
- From the ASSOCIATION.—Proceedings of the Geologists' Association. Vol. IV. No. 8.
- From the INSTITUTION.—Journal of the Royal Institution of Cornwall. No. 18, 1876.
- From the ASSOCIATION.—Transactions of the Devonshire Association. Vol. VIII. 1876.
- From the BOARD OF ADMIRALTY.—Report of Proceedings of the Arctic Expedition.
- From the REGISTRAR-GENERAL.—Statistics of the Colony of New Zealand.
- From the SOCIETY.—Transactions of the Society of Biblical Archaeology. Vol. V. Part 1, 1876.

From the Right Hon. Lord ARTHUR RUSSELL, M.P.—Correspondence relating to the Island of Tristan D'Acunha.
From the EDITOR.—Nature (to date).

FOR THE MUSEUM.

From EDWIN CANTON, Esq., F.R.C.S.—Skull of a Bushunan from the Cape.

The President read the following papers :

OPENING of the DYKE ROAD, or BLACK BURGH TUMULUS, near BRIGHTON, in 1872. By Col. A. LANE FOX.

SHORTLY after the close of the meeting of the British Association at Brighton, in 1872, I opened a tumulus on the road from Brighton to the Devil's Dyke, which, as the contents were remarkable, and the record of it has not yet been published, it appears desirable I should bring the matter before the Institute. I had noted this barrow for examination some years before, and, as the meeting of the Association afforded a good opportunity, I applied to the owner of the farm, Mr. Martin Robinson, of Saddlescombe, from whom I received liberal permission to dig there.

The tumulus is about a mile from the Devil's Dyke, and about fifty yards to the west of the road, a short way to the north of the spot where it branches off from the road to Saddlescombe. It is in a line due north, and about two miles distant from the spot in which the well-known amber cup, now in the Brighton Museum, was found in 1856, in a tumulus in Hove Fields. It will be remembered that the contents of this tumulus consisted of the amber cup, a bronze dagger, a double-headed stone axe, and a whetstone, in association with a burnt body, all of which are now in the Brighton Museum.

The mound now to be described was not very conspicuous from the road, to which fact it probably owed its preservation ; but was nevertheless known to the peasantry of the neighbourhood from time immemorial as the Black Burgh.

After taking a careful section with a spirit-level, in a line running north and south through the centre, the result of which is given in Pl. xiii., in order that the shape of the mound before I touched it may be recorded, I commenced a trench 20 feet wide near the foot of the mound at its southern extremity, digging down until the hard chalk floor was reached, at about a foot and a half beneath the surface, and then northward towards the centre, being careful to lay bare the chalk floor everywhere.

One of the first things discovered was a vertical cylindrical

hole in the chalk floor, marked A in the plan and section, Pl. xiii., 18 feet distant from the centre point. It was 1 foot in depth, and $4\frac{1}{2}$ inches in diameter, with smooth sides and a flat bottom, perfectly cylindrical, and evidently cut in the chalk with care. It was filled with fine white chalk rubble, which, being taken out and carefully examined, contained nothing more, and showed no signs of decomposed matter. It is not unusual to find holes cut out in the floors of tumuli, and the workmen had been instructed to look out for such holes. I have noticed a number of them in a tumulus opened by me near Aldborough, in Suffolk, and in one upon Merrow Down, near Guildford; and Canon Greenwell has found them frequently in the tumuli of the Yorkshire Wolds. He supposes them to have been formed to contain food for the dead, and to have served the same purposes which, under other circumstances, was fulfilled by the earthen vessels that are found with the dead; but they are usually of a different shape, being more or less basin-shaped, $1\frac{1}{2}$ to 2 feet in diameter, and the same in depth. The cylindrical form discovered in this tumulus is unusual; I know of no other example, and the care with which it was cut makes it worthy of record. Close to it, at B, Pl. xiii., was a small pointed hole, 6 inches deep, which might possibly have been formed by the point of a stake. Still nearer the centre, at C, Pl. xiii., to the north-east of the first, and about 10 feet from it, was another hole, somewhat larger, 1 foot 7 inches deep, with an enlargement at the bottom, giving it the form of a leg and foot. This appeared as if formed to contain something; but, after the most careful search, nothing was found, nor was there any trace of decayed matter visible.

All over the top of the tumulus, just beneath the turf, an immense number of flint flakes and chips were found. I counted as many as 223 on the first day, and, with them, several well-formed scrapers. Both the flakes and scrapers continued to turn up in lesser quantities throughout the tumulus. Thirteen scrapers were found in all, and one well-formed borer (fig. 1, Pl. xiv.).

As we approached the centre, a horizontal layer of charcoal (R S, Pl. xiii.), about 2 inches thick, was found, extending over the whole of the centre to a distance of 20 feet from it. It was 1 foot 10 inches beneath the surface of the tumulus, and parallel to the chalk floor. The wood from this deposit having been microscopically examined by Mr. Wonfor, of Brighton, was found to be composed of oak. No animal bones were found in this deposit; but a little below it, at E, Pl. xiii., about 2 feet from the surface, two pieces of rib of goat or sheep, 3 and 4 inches in length respectively, were found (fig. 2, Pl. xiv.).

They had been sawed with some cutting instrument, probably a flint, and the longest piece had four deep notches cut near the ends with the same instrument. The bones adhered to the tongue, and were probably of the age of the tumulus. The notches were uniformly $\frac{1}{2}$ of an inch in depth, and of the same width. Three of them at one end extended about three parts across the flat concave face of the rib, and the fourth was cut across the edge at the opposite end. It is possible these marks may indicate that the bones were used as dice in some game of chance, as the practice is amongst North American Indians and others in a like state of culture.

A rude piece of rim of British pottery half an inch thick, black on the inside and brownish red outside, of close pasty texture, scored on the outside with lines forming a chequer pattern by the impression of twisted thongs, the upper edge bevelled upwards towards the outside, but without any enlargement or overhanging lip, was found at T, in the seam of charcoal above mentioned.

The only other object worth noticing before coming to the grave was a modern iron shetlink used by ploughmen to mend their harness, which was found one foot beneath the surface at D, which it is useful to record as showing to what depth heavy objects of known modern workmanship may penetrate into a tumulus and become mixed with others of great antiquity.

Digging onwards towards the centre, we came to the grave containing the central interment, which was shown by the pick sinking into the loose chalk rubble with which it was filled. It consisted of an oblong grave, F, G, H, I, Pl. xiii., 12 feet in length by 8 in width, the length of which was N.W. and S.E., extending to a depth of from 2 feet 3 inches to 2 feet 5 inches beneath the chalk floor of the other part of the tumulus already excavated, so that the bottom of the grave was 6 feet beneath the top of the mound, 4 feet beneath the layer of charcoal which covered it, and 3 feet 6 inches beneath the natural surface of the ground; the bottom was smooth and even and the sides perpendicular, all cut out of the solid chalk.

I will omit the order of discovery, and describe at once the skeleton which was found lying on the bottom, crouched up in the north-western portion of the grave: it was lying on its left side, with the face consequently towards the north-east, the legs drawn up, and the arms crossed upon the breast, which was shown by finding the fingers of both hands nearly touching the chin, the left leg was drawn up a little more than the right leg. The whole skeleton was crushed to a thickness of about 2 inches by the superincumbent earth. The bones were so decayed that although the position was marked with sufficient clearness, they

could not be removed entire with the exception of a portion of the pelvis and some of the leg bones. These having been submitted to Professor Flower, of the Royal College of Surgeons, he has pronounced them with very little doubt, yet without absolute certainty, to be the bones of a female about 5 feet 6 inches in height, slightly made, and not very muscular, as will be seen by his annexed letter on the subject which he very kindly addressed to me after a careful examination of the parts. If, therefore, this is the skeleton of a female, the associated remains are of unusual interest. They consisted of a bronze knife-dagger, a bronze pin, an earthen cup or food vessel, and a necklace of shale beads. These rested also on the floor of the grave, and occupied the opposite or south-eastern portion of it. The bronze dagger, fig. 3, Pl. xiv., lay about 2 feet from the feet of the skeleton, with the point to the east. It is 4 inches in length, triangular, and about $1\frac{7}{8}$ inch wide at the base; the thin portion of the sides of the blade are $\frac{7}{8}$ inch in width at the base, narrowing to the point, and having a central triangular rib $\frac{1}{8}$ inch wide at the base and $\frac{1}{2}$ inch thick, tapering also to the point. The handle was secured by two bronze rivets $\frac{1}{2}$ inch in length, which remain. It is but slightly patinated, showing portions in which the bronze colour remains.

The earthenware cup or food vessel, fig. 4, Pl. xiv., was situated to the south-east of the feet of the skeleton and about 2 feet from them. It was broken in three pieces, obviously by the same cause that had flattened the skeleton. When restored it measured 2 inches in height, 3 inches greatest diameter at top, $2\frac{1}{2}$ inches diameter at bottom, thickness $\frac{1}{2}$ inch, weight about 4 oz., of a close pasty texture, apparently without quartz grains, very slightly and irregularly projecting at rim, handmade, not turned, of a brownish red colour, without any ornament, except on one side; where near the rim, on one side only, there are two semilunar ears close together, projecting about $\frac{1}{2}$ inch, on the upper part, and diminishing gradually towards the lower part of the curves. This form is remarkable. I know of nothing exactly like it; the nearest approach to it being upon two urns figured in Waring's "*Ceramic Art*," Pl. xviii., Nos. 245 and 247, one from a tumulus near Swanage, Dorset, which was associated with a copper ring brooch; and another from a Cornish barrow described by Borlase, and attributed by him to the Romano-British period in consequence of eight or nine Roman coins, one of Constans, well preserved, having been found in the earth of the kistvaen which enclosed the urn. The ornamentation upon these large urns differs from that of the present diminutive specimen, inasmuch as the arch-shaped ears, instead of being close together

and confined to one side of the vessel, are separated at regular intervals around the side of the urn, and they are also much more carefully formed than the one now under consideration, which is roughly constructed. Close to the earthen vessel was a bronze pin, fig. 5, Pl. xiv., 2 inches in length; the head, if it had one, was wanting; the pin for a space of $\frac{1}{2}$ inch from the thicker end was square, with $\frac{1}{2}$ inch sides; the remainder rounded: it has broken in two pieces, and is finely patenated. In the chalk rubble surrounding the earthen vessel were found a number of small disc-shaped beads, fig. 6, Pl. xiv., $\frac{1}{2}$ inch in diameter and about $\frac{1}{2}$ inch thick, some being thicker than others, perforated in the centre. They are of shale, and appear to have been originally strung together; not more than fifty of them could be found, which makes it improbable that they were used as a necklace, they may possibly have been attached to the pin or may have served as an armlet or bracelet. Canon Greenwell informs me that he has met with similar disc-shaped beads in Northumberland, but usually interspersed at intervals with long oval beads of larger size, or shells, or the vertebra of a fish.

These four objects, having been found on the floor of the grave, were undoubtedly interred with the body, but we have now to consider other objects the position of which above the skeleton renders their contemporaneity less certain. Four inches above the floor of the grave, in the chalk rubble at L, Pl. xiii., just above the back of the skeleton, were found several fragments of a different kind of pottery much harder and better baked, not more than $\frac{1}{2}$ inch in thickness, and having fine grains of quartz in its composition. Unlike the vessel above mentioned this pottery was wheel-turned; the form also was different, and was of the kind usually attributed to the Romano-British period. The rim projected outwards, and the vessel appears to have been of globular form and of some size, being 7 inches in diameter at the rim, a fragment of which is shown in fig. 7, Pl. xiv. Only a few fragments were found in this spot, but the remainder apparently of the same vessel was found higher up, at K, Pl. xiii., at a distance of 5 feet to the south of the former pieces, on the level of the chalk floor of the tumulus, that is, 2 feet 5 inches above the floor of the grave, yet within the area of the grave, if we consider it to have been dug from the surface of the ground. With these latter fragments were found two small bronze disc-shaped objects resembling coins, but apparently without any trace of a device upon them, figs. 8 and 9, Pl. xiv. They are about the size of British coins, $\frac{1}{2}$ inch in diameter and $\frac{1}{2}$ inch thick in the middle, tapering to a sharp edge on the outside, which may, however, be the result of corrosion, weight 13 and

14 grains respectively. It is possible these may not be coins, but merely pieces of bronze belonging to some decayed object; there was no trace of a rivet in the centre of the discs. Two well-formed flint scrapers, one of which is shown in figs. 10 and 11, Pl. xiv., were also found within the area of the grave, but I am unable to say exactly at what depth, certainly not in contact with the body.

The question now to be considered is whether the last-mentioned objects, found above the body, were of the date of the interment or subsequent. It is evident that the same cause which flattened the skeleton into a space of 2 inches in thickness would also press down objects into the grave which were originally deposited above it, or a secondary interment might, as is not unfrequently found to be the case elsewhere, have extended as low down as the primary interment, even in some cases to the extent of disturbing the bones of the latter. The large vessel, of which the fragments were found in two places, was evidently not put in whole, but deposited as shards with either the primary or secondary interment. It is not unusual to find fragments of pottery of a superior quality so placed in tumuli containing cinerary urns of inferior texture, the latter constructed merely to contain the burnt bones or as food vessels; the superior pottery was probably that in use for ordinary culinary purposes. On the other hand, it is impossible that the bronze disc-shaped objects, if they are coins, could be of the date of the interment, notwithstanding the alleged discovery in a Cornish barrow of Roman coins with an urn not unlike, in its ornamentation, the small food vessel found with this skeleton. The coins, if such they are, though I am inclined to think they are not, are clearly of the date of the shards, for although one such coin might have worked its way down from the surface, it is most improbable that two should have descended to the same spot by this means. I am inclined to think, therefore, that, notwithstanding the absence of burnt bones with the shards, they belong to a secondary interment, and this view is confirmed by the observation that a vertical line could be traced through the rubble nearly over the shards and passing through the seam of charcoal, which latter had apparently been disturbed in this place.

The history of the interments may therefore have been as follows: An oblong grave, about 3 feet deep, was dug from the surface into the solid chalk, and the body put in, crouched up, on its left side, with the food vessel, knife, and ornaments belonging to the deceased. It was then filled up, and some additional earth added over the top. A fire was then lighted over the grave, but there is no evidence here, as so frequently happens

elsewhere, of a funeral feast. The mound was then completed to its full height, and flint flakes and a few scrapers and other implements thrown upon the surface of the tumulus. Subsequently a secondary interment was made in the centre; the shards and the coins, or disc-shaped objects, put in, probably with a burnt or an unburnt body, the bones of which, being near the surface, have since decayed. Possibly the remains of other secondary interments might be found if the tumulus were excavated throughout; but the owner of the land to whose kindness I was indebted for permission to dig was unwilling that a larger quantity of chalk should be thrown up than was necessary, and I therefore desisted, but the plan clearly shows what part of the tumulus was excavated, so that this part may be avoided by future investigators should they think it worth while to prosecute the inquiry.

The chief interest of the present find consists in the discovery of the bronze knife-dagger, the peculiar semicircular ornamentation of the food vessel, and the coins, if such they are, with the secondary interment. The association of a knife-dagger with the body of a female is also quite a novelty in interments of this age. The knife-dagger is of the same form as the one found with the amber cup at Hove. Similar ones have been found by Canon Greenwell in the Yorkshire barrows, and are attributed by him to the early bronze age, but they are rare, and I believe that in all his diggings he has only found three in actual association with a skeleton.

I trust that the minute details of measurement that I have given will not be found very tedious. It must be remembered that comparatively few of these barrows are now left to be explored, and upon those who dig into them devolves the duty of recording carefully all that they find. In our present state of ignorance concerning them we cannot tell upon what points of detail theories in after ages may be made to turn. We know how much we could have wished for more detailed accounts from our predecessors. If we must err, therefore, it is well that it should be on the side of accuracy.

ROYAL COLLEGE OF SURGEONS OF ENGLAND, LONDON, W.C.,
18th September, 1872.

DEAR COL. LANE FOX,—I have sent the bones which you left with me back by parcels delivery. They consist of fragments of the skull and of the pelvis and a right femur, and belong to a person perfectly adult, but not aged. The teeth present no signs of decay, and are all in place, except the posterior right upper molar, which has been lost during life, and the alveolus filled up. The left lower molar is also missing, but has probably been lost subsequently to the exhumation of the skeleton. The grinding

surfaces of all the teeth are moderately worn. Judging by the size of the femur (17½ inches in length), the person would have been about 5 feet 6 inches high, or rather less, slightly made, and not very muscular. It is unfortunate that the pelvis is not more complete, as then the sex could be determined with certainty. However, from a careful examination of the fragments, I have very little doubt but that it was a *female*. The great sciatic notch is more open than in any male pelvis that I have ever seen, which is a pretty sure criterion, and the general character of the other bones corroborate this opinion, though I do not know how it will accord with the conditions under which you found the skeleton.—Believe me, very truly yours,

W. H. FLOWER.

EXCAVATIONS in the CAMP and TUMULUS at SEAFORD, SUSSEX.
By Col. A. LANE FOX.

IN a paper on the hill forts of Sussex, published in vol. xlii. of the *Archæologia*, and read in February, 1868, I made some allusion to the camp at Seaford. The comparatively few flint flakes found on the surface in its neighbourhood, the more or less rectangular outline, the presence of Roman remains in its vicinity, and the existence of a mound in the interior, occupying a position near the principal entrance, as if connected in some way with the defence of it, led me to view the local assignation of a Roman origin to this work with more favour than I had done any of the traditions which so commonly attribute the camps of this neighbourhood to that people.

This view, however, never very definitely held by me at any time, was modified to a great extent by information which I received before the paper was printed, and which I was able to add in a note, to the effect that Mr. John Evans, F.R.S., who had spent a few weeks at Seaford in the autumn of 1867, and who had therefore better opportunities of carefully examining this work, had found a scraper and a few flint flakes within the camp. When, therefore, it was decided that the Exploration Committee of the present year should turn its attention to this place, partly through an invitation made to us by Mr. John Price, member of the Anthropological Institute, and partly owing to a false report that the cliff on which the camp stands was shortly to be blown up for the formation of a breakwater, I at once set myself to examine into those other superficial evidences of design in the arrangement of the camp by which the fortifications of the Britons may so invariably be distinguished from those of other races, and especially the Romans.

The destruction of probably at least one-half of this camp, by the erosion of the cliff by the sea, creates a difficulty in this case which is not commonly met with, and gives to the camp, as it

is now seen, an angular shape, which led me formerly to think it possible that the two faces of the rampart now remaining might originally have been two of the sides of a Roman parallelogram. But upon further examination, and comparison with other British encampments which I have lately had the opportunity of seeing, I am able to trace the design of a British engineer in that very peculiarity of this work which had originally led me to doubt it, and to form a very fair conjecture as to the shape of the other portion of the hill which has now been washed away by the sea. The most characteristic feature of a British earthwork, as I have shown in my former paper, to which I have referred; consists in its conforming to the outline of the hill, the rampart following the tactical line of defence—that is to say, that in selecting the line for the rampart they went down the side of the hill far enough to see to the bottom, and thus to leave no *dead ground* outside where an enemy could conceal himself. But when the hill was so large that to occupy the whole of it in this way would entail the construction of a much larger fortress than they had the means of defending, it was customary to select a suitable spot at which the natural line of defence on the hill-side might be abandoned, and turning the rampart suddenly at right angles, to carry it straight across the hill-top, until it met the line of defence on the other side. The spot selected for this purpose was usually one in which the ground on the top of the hill could be commanded for a sufficient distance on the outside of the camp; and as the point of the angle was necessarily the weakest point, on account of the diverging fire from the two faces, it was usual to make the rampart higher at this point.

The camp at Puttenham in Surrey, usually attributed to the Romans, but in reality British, is an example of this system of defence. Here the north and south sides of the camp follow the line of defence of the hill. The west side, being very steep, required no defence; but the east side, on which the ridge of the hill continues for some distance, is cut across, by the rampart turning at right angles, until it reaches the slope on the other side, and the rampart at the angles is of unusual height. At Seaford, the north face conforms to the line of the hill, as seen by the contour lines on the 25-inch map (Sheets lxxix. 9, lxxix. 13), until it reaches a point to the eastward where the rampart can be drawn across the top of the hill with a sufficient command on the outside. The rampart at and near the salient angle also rises considerably higher than on the faces; and the eastern face without doubt was continued southward until it met the slope which, in all probability, swept round that part of the camp which has been washed away by the sea. But there is

another peculiarity in this camp which, upon a cursory view of it, might lead to the assumption that it was not British. The northern face of the camp conforms, as I have said, to the defensive line of the hill. It does so generally, but there are few places in which, standing on the rampart as it now exists, there is a considerable amount of *dead ground* on the outside. The hill dips down, and the slope is lost to view; but the spectator from the rampart is unable to see to what extent this dead ground descends below the line of vision, or how much cover it might afford to an advancing enemy. In order to determine this, with the assistance of Mr. Harrison, I took a careful section of the hill upon one of the two lines marked A B and C D upon the map, fig. 1, Pl. xvii., that is, towards the north and north-west, and having checked this with the contours on the 25-inch Ordnance map, the result is given in the two sections, figs. 4 and 5, Pl. xv.

Drawing a straight line on these sections from a point 5 feet above the lowest part of the *dead ground* upwards at a tangent to the brow of the hill (see "line of vision," figs. 4 and 5), I find that in both cases this line cuts the rampart at 10 feet above the present crest. In order, therefore, that a man upon the rampart should be enabled to see an enemy approaching to attack by the hollows which I have termed *dead ground*, it would be necessary that his feet should be about 5 feet higher than the present crest of the rampart. Now, the excavation of a portion of the ditch of which I am about to give an account, and which is represented in the section, fig. 3, Pl. xv., showed that the ditch has silted up to the extent of 7 feet. If we take 5 feet of this and put it upon the rampart, it will place the defender of the rampart in a position to see the whole of the ground outside the camp sufficiently to prevent any enemy from concealing himself within range of his weapons; and when we consider the curved *trajectory* which an arrow forms (and arrows were used by the defenders of this place, as I shall afterwards show), it is obvious that the assailants must have been exposed to fire from head to foot from the defenders of the rampart. I see no reason to doubt, but, on the contrary, every reason to be sure, that the rampart was originally at least 5 feet higher than it is now; and from this we learn how well the principles of British castrametation are carried out in this work—how carefully the defenders economised their interior space, drawing their rampart just far enough down the hill to obtain a command of view, but not one yard farther than was necessary for that purpose. And I trust also this further point may appear to you to be demonstrated by what I have said, viz. the importance of taking accurate measurements of these

entrenchments, for without a section it could not in this case have been shown by the mere view from the rampart how well this camp does actually fulfil the conditions of a British earth-work. The few hasty scratches with which it is too commonly the custom to delineate entrenchments of this nature utterly fail to bring out the points which are sometimes of primary importance in determining their antiquity and uses.

We next turned our attention to the mound in the interior of the camp, the position of which, commanding the principal entrance to the camp, had led me to conjecture that if it were not a tumulus, it might possibly be connected in some way with the defence of the gateway. The section, fig. 1, Pl. xv., shows the position of this mound, the centre of which was 64 feet behind the crest of the north face of the rampart, and about the same distance to the south-west of the opening in the rampart. The centre line, through which the section runs in a direction nearly north and south, was not taken through the highest part of the mound, but passed through a slight depression on the top of it, the ground rising slightly to the east and west, so as to give it the appearance of having been either a twin barrow, or of having been already opened in the centre. I determined, therefore, to cut a trench of sufficient width to embrace both centres, should such be found. A trench 18 feet in width (fig. 2, Pl. xv.) was accordingly commenced on the south side, digging down until the solid ground was attained at 2 feet beneath the surface. This was determined by the hardness and different colour of the soil, as the tumulus here is not situated upon the chalk, but upon a patch of tertiary formation overlying the chalk in several places on the northern slope of the hill. About a foot and a half of mould with very few stones was found covering the barrow throughout the part excavated; then mould interspersed with numerous flint stones, and, at a depth of 3 feet 6 inches beneath the top, the natural soil, consisting of hard clay of a lighter reddish colour without stones, as shown in the section (fig. 1, Pl. xv.). An examination of the edge of the cliff shows that this clay deposit extends to a depth of 10 to 15 feet in some places above the chalk.

Digging on northwards towards the centre, we found a fragment of British pottery and a large flint scraper, $3\frac{1}{2}$ inches in length, 2 feet beneath the top at A (fig. 1, Pl. xv.), and another small fragment of the same pottery at the same depth, 3 feet to the north of the last. Digging down to the clay floor, two holes were found in it (B and C, figs. 1 and 2, Pl. xv.), one about 3 feet to the N.E. of the centre, and another 8 feet to the S.W. Both were a foot in diameter, and the same in depth. These holes, it appeared from their contents, had been formed for the

purpose of depositing objects belonging to the deceased which might be of use to him in the future state. The contents of the first hole consisted, firstly, of a chipped celt (fig. 1, Pl. xvi.), $4\frac{1}{2}$ inches in length and 2 in width, without any trace of grinding. This was found at 3 feet 2 inches beneath the top of the tumulus, just over the hole; for although the hole had not been discovered at the time it was found, the clay floor not having been reached at the time, yet when it is considered that the hole must have been dug from the surface of the ground, it is evident that the chipped celt must have been within the area of the hole, the lower portion of which only, viz. that part which penetrated the clay floor, was apparent to us. The fact of this having been an intentional deposit, and not an object dropped accidentally in the earth of the tumulus, was shown by its being surrounded by a patch of soft mould. The workmen had drawn my attention to this mould, and, having scraped it away with a trowel, I found the celt in the middle of the deposit. Scraping away the earth deeper down, the hole was discovered beneath (B, figs. 1 and 2, Pl. xv.), and the following objects then turned up in succession—viz. a few fragments of British pottery, some charcoal, and a quantity of flint flakes; a flint chipped to an edge all round, about $2\frac{1}{2}$ inches in circumference, of the kind which at Cissbury were supposed to be throw-stones. This was at 3 feet 5 inches from the top; five flint saws (two of which are shown in figs. 4 and 5, Pl. xvi.), finely serrated at the edge, and several more fragments of British pottery much decayed. Scraping deeper into the hole, a flint hammer-stone (fig. 3, Pl. xvi.), 3 inches in diameter and much bruised by hammering, was found in the centre of it; and at the bottom a polished flint celt (fig. 2, Pl. xvi.), 5 inches long and 3 inches in width, which had been broken and re-chipped to form a new edge. One side of the celt only was ground, and the other side, as well as the edge, formed by chipping only, no attempt at grinding having been made in repairing the instrument for the ultimate purpose for which it was deposited in the grave. The celt in its original polished state had evidently been about twice its present size; the edge had only been very imperfectly re-formed and the side re-touched by chipping. In the rubbish thrown up from near this spot another hammer-stone, about $3\frac{1}{2}$ inches in diameter, was discovered by Mr. Harrison; one side of this was much bruised by hammering, and the remaining portion being in its natural state showed that it was not formed out of a chalk flint, but consisted of a sea-worn pebble, as is so frequently found to be the case in this part of England, notwithstanding the great factory of chalk flints at Cissbury hard by. A fragment of

another polished celt, consisting of 3 inches of the small end, was also turned up in the mould from near this spot. The colour of this fragment was white, and quite different from that of fig. 2 and fig. 2a.*

One foot to the north of this hole, upon the clay floor, 3 feet 6 inches beneath the top surface, another large flake (fig. 2a, Pl. xvi.) was found, struck from a polished celt, which, from its form and colour, was evidently a piece of the same celt that was found in the hole. This piece was 2 inches in length, and had clearly belonged to the lower and broader part of the celt. On it was seen the chipping of another edge, and on the upper side of the piece the position of the bulb of percussion, marked by a \times in fig. 2a, showed that it had been struck off after the piece from which it was flaked had already been detached from the original celt. By no possibility could this bulb of percussion have been formed by a blow delivered on the surface of the entire celt. The blow which caused it must have been delivered on a fractured surface, after the celt had already been split in half. So that we have here evidence of at least three or four distinct fractures having taken place at the time of the interment: firstly, the original polished celt was broken at the edge and re-chipped; then the celt was subsequently broken in half near the middle, and finally, a large flake was knocked off one of the fractured portions, and the other piece had a new edge chipped upon it, and all the pieces were then deposited together in the hole in the grave. The probable form of the original celt is indicated by a dotted line in Pl. xvi.

For what purpose could this breaking up of an implement over the grave of the deceased have been practised? We are reminded of the superstitious rites of some tribes of North American Indians, who break or otherwise destroy all the weapons of the deceased warriors before placing them in the graves, under the supposition that it is the soul of the defunct weapon which accompanies that of the defunct warrior into the happy hunting grounds of the life to come.

Another scraper and several fragments of pottery were found over the other hole (C), to the south-west of the centre; and a scraper, with several flakes and pottery, further to the north-east, where a seam of burnt earth was followed for some distance, until it approached towards the edge of the tumulus on that side.

* From long observation I am inclined to think that the degree of discolouration observable in flint depends not only on time and exposure, but also in a great measure, if not mainly, on the quality of the flint itself. At Cissbury we found that flints from the same formation varied in colour through their position and exposure. Here we find two flints deposited in the same spot and under similar conditions of exposure, yet varying greatly in the degree of discolouration.

Lastly, Mr. Harrison, in searching amongst the *débris* which had been thrown out of the tumulus, discovered a well-formed, barbed, flint arrow-head (fig. 6, Pl. xvi.), $1\frac{1}{2}$ inch in length, by 1 inch in width at the base. The barbs, of which one had been broken off, extended downwards to the line of the base of the tang.

The foregoing are the contents of what has now been clearly shown to be a tumulus, and which, from the absence of any object of metal, may, with great probability, be ascribed, if not to the neolithic age, at any rate to an age in which flint implements continued in use. The celts and the flint saws show, at least, that the ordinary tools of the period were of flint. A somewhat similar polished celt is figured in Horsfield's "*History of Lewes*," as having been found in a barrow on Cliff Hill; and the chipped celt is of such frequent occurrence in this part of England as to prove that, more frequently than otherwise, the grinding process was not resorted to in the manufacture of implements of this kind. The pottery discovered in the tumulus was all of the quality usually termed British, that is, of a soft pasty texture, badly baked, red on one side and black on the other, and interspersed with large white grains, apparently of quartz.

No trace of bones, burnt or otherwise, were discovered. No trace of a central grave beneath the clay floor was found, although the surface of it was picked over several times in search of one, and it is probable that the body of the deceased was deposited no lower than the clay floor, and that all vestige of it has disappeared.

Whether the tumulus was of the age of the camp, or not, it is of course impossible to determine with certainty; but the probability is, I think, in favour of its being so. Nothing would be more natural than to bury a deceased chief in rear of his rampart, and close to the main entrance; whereas, if the camp had been constructed by a subsequent race of people, it is not unlikely that the tumulus might have been destroyed. I have reason to believe that there are other tumuli in the vicinity, and, from the trace of flint chips observable on the surface, it appears probable that the spot marked "*Hawk's Brow*" on the Ordnance 25-inch map would repay the trouble of examining.

We now determined to continue our inquiry into the age of the entrenchment, by examining the deposits in the ditch. It may perhaps be remembered by some of those present, that in our investigations at Cissbury important evidence was brought to light, by observing the relative depths at which objects of different periods were discovered in the silting of the ditch of the entrenchment; that Romano-British pottery was

found about half-way down in the silting, that is, about 2 feet from the surface, but not lower, and the only small fragment of pottery found at a lower depth was of British manufacture. Oyster shells, that almost invariable accompaniment of Roman remains, were found with the pottery of that age, but not lower. The ditch had silted up slowly, and the relics of the different periods were found at the various levels to which they had fallen, as the deposits increased in thickness from time to time.

We determined to make a similar examination of the ditch at Seaford, and for that purpose opened a trench 20 feet in length by 17 in width upon the line shown in the section C D (fig. 5, Pl. xv., the details of which are given in the section, fig. 3, Pl. xv.), to the westward of the camp, about 30 yards from the edge of the cliff. The results may be briefly described as follow: The surface mould, which on the crest of the rampart was no thicker than 8 to 10 inches, increased gradually to 2 feet at the foot of the interior slope, where the washing from the hill behind, and the increased growth of grass, consequent on the moisture in the hollow, had caused it to increase more rapidly. In the ditch this deposit of mould extended to a depth of 3 feet below the present surface, and it contained few stones, if any. In the upper portion of this mould, not lower than one foot from the surface, one or two pieces of mediæval pottery with green glaze upon it was found, and a piece of an old-fashioned clay pipe, then Romano-British pottery began to appear, and the concave line which bounded the lower margin of the mould, at 3 feet beneath the top, was thickly strewn with Romano-British pottery throughout the 20 feet excavated. Below that, the deposit consisted of chalk rubble, without any admixture of mould, as far as the original chalk bottom, which was 7 feet beneath the surface, and in this chalk rubble not a fragment of pottery of any kind was found. One or two oysters were found in the mould, none below it. A few sea-shore pebbles, such as we found in the ditch at Cissbury, and which we supposed to have been used as sling-stones, were found in both deposits. These must have been imported, as they are not found in the tertiary deposits upon the hill. Quantities of limpets were found in the mould, but not lower, and they appear to have been used as food. A whelk-shell was found at 2 feet, with *Helix hortensis* and *Helix nemoralis* in considerable numbers. The ditch was three feet wide at the bottom, the escarp rose at an angle of 45°, and the counterscarp at a more abrupt angle near the bottom, but rounded off towards the top.

With respect to the chalk rubble, no period can be assigned for the accumulation of it. The 4 feet of it at the bottom of the ditch may have taken years to accumulate, or may have been

formed in a single day, but it is probable that as long as the place was in use as a fortress the ditch would be kept open by throwing the rubble up again on to the rampart as it fell down. The absence of any relic in this rubble renders the evidence purely negative on this point. But it is evident that a time arrived when the accumulated rubble was allowed to remain, and the grass began to grow upon it. At this time it was occupied by the Romans, or the Britons of the Roman era, and the shards of their broken pottery were thrown down upon the ditch. Since then the evidence is clear that the silting accumulated 3 feet up to the present time, and was formed partly, no doubt, by washing from the rampart, but chiefly by the increased growth of vegetation, which is still apparent in the moist hollow of the ditch.

A cutting was also made through the rampart, but nothing was found except two flakes, the occurrence of which may have been accidental. A concave line of mould was seen in this section, which corresponds to some extent with the section of the rampart at Cissbury. The pottery in the ditch was of two kinds—black and brown—both, however, of better quality than that found in the tumulus, and of the same kind as that discovered in the cemetery at the foot of the hill to the north.

The accurate account which Mr. J. H. Price and Mr. J. Price give of their explorations in this cemetery renders it unnecessary that I should say much about it. I have, however, drawn a section (fig. 2, Pl. xvii.) of the part of the cemetery which was excavated by me during their absence. In this section is shown the position of the two large urns now exhibited, which, with some difficulty, I was able to extract from the matrix without injury. One (fig. 2, Pl. xviii.) a Roman vessel, wheel-turned, about 9 in. in height, and elaborately ornamented with zigzag lines, was found 2 ft. 6 in. beneath the surface. The rim had been broken before interment, and re-mended by a piece of clay very rudely pressed on. The other, (fig. 1, Pl. xviii.) found at 3 ft. 6 in. from the surface, is of ruder workmanship, also wheel-turned, but made with less care than the former, and 1 foot high. Whilst excavating this last we obtained very clear evidence that an older urn had been broken up in the process of depositing it in the grave. A fragment of the rim of the older urn lay touching the side of the new urn, with the rim downwards. This piece was brought out attached to the urn, and its position carefully examined before detaching it from the position in which it lay. Both urns contained burnt bones, but the most careful search failed to detect anything else. Round about the urns, however, and at the same depth, numerous flint flakes and one scraper (fig. 7, Pl. xvi.) were discovered. The position of these

in association with burials of the Roman or post-Roman age is worthy of attention, and confirms, in a most satisfactory manner, the similar discovery of flint flakes with Roman interments by Mr. Boyd Dawkins in the cemetery at Hardham, in Sussex. My own excavations in the pit at St. Peter's, near Broadstairs, and other places, also confirm me in the supposition that flint flakes, and perhaps scrapers also, may have continued to be employed, at least for funereal purposes, by the Britons as lately as the Roman age. The further excavation of the two Messrs. Price will be of interest, however, in determining whether this cemetery contains any relics of an age prior to the Roman to which the flint flakes may have belonged. The urns were covered with a stratum of clay, which, as there was no break in it, must have been artificially deposited over them.*

I have only further to observe, in respect to the topography of this spot, that a line of embankment, with a ditch on the west side, runs in a zigzag line northward from the Ham Bank, at the bottom of the hill, towards the direction of the camp on the hill, and in the ditch of this work nine Sarsen stones may be seen, which appear evidently to have been deposited here by hand in connection with this entrenchment. The position of the ditch of this work being towards the west, where an arm of the sea must formerly have rendered this inlet a secure harbour for vessels of light draught, and the rectangular outline of the entrenchment, together with its position immediately to the south, and contiguous to what has evidently been the Roman road, leads me to think that evidence of Roman occupation might probably result from the excavation of this work. The irruption of the sea a few months ago, consequent on the destruction of the shingle bank below Seaford, caused this ground to be flooded as far as the Ham Bank, completely destroying the house at Lion Place, and marking by its ravages the line of the valley which was formerly occupied by the sea.

One point more remains to be touched upon, viz. the position of the ancient cultivated terrace which is shown in the 25-inch map, and in the section C D, fig. 5, Pl. xv., and which extends from the cliff inland for a distance of about a quarter of a mile on the slope to the westward of the camp. Similar

* It is worthy of note that Dr. Schliemann, in his description of the so-called tomb of Agamemnon discovered by him at Mycenæ in November of the present year, and reported in the *Times* of the 22nd December, says that all the burnt bodies, with their gold ornaments and the obsidian flakes and bronze implements with which they were associated, were, for a reason unknown to him, covered with a layer of clay 4 inches thick, and over that a layer of pebbles deposited subsequently to cremation.—A. L. F.

terraces to these, formed by the cultivation of the hill-sides in very early times, are common throughout the South Downs, and are doubtless of great antiquity. It is worthy of remark that this strip of land is now held by the corporation of Seaford, by whom it was originally derived from the Church, and is known as the Church lands on the hill. Where the church was, or how it became possessed of this particular plot of ground, I am unable to say; but the fact of its being held under a different tenure from the surrounding fields is worthy of note, and might possibly afford some clue to its history if it could be traced.

A British gold coin, found on the cliff between the camp and the town, was exhibited at the meeting.

EXPLANATION OF PLATE XIII.

Plan and Section of Excavation in the Black Burgh Tumulus, Brighton.

A.—Cylindrical hole in chalk floor, 1 foot deep, $4\frac{1}{2}$ inches diameter.

B.—Small hole, 6 inches deep.

C.—Leg-shaped hole, 1 foot 7 inches deep.

D.—Modern shetlink, 1 foot from surface.

E.—Rib of goat, scored, 2 feet from surface (fig. 2, Pl. xiv.).

F, G, H, I.—Oblong grave cut in the solid chalk, 12 feet by 8, and 2 feet 3 inches to 2 feet 5 inches in depth, containing central interment, and filled with chalk rubble.

K.—Two circular bronze pieces $\frac{7}{8}$ inch in diameter, resembling coins, with fragments of pottery, lathe-turned, on level of top of grave (figs. 7, 8, and 9, Pl. xiv.).

L.—Pottery of same character as at K, 4 inches above floor of grave.

M.—Bronze knife-dagger, 4 inches long, on floor of grave, point to east (figs. 3, Pl. xiv. p. 283).

N.—Small earthen vessel, 2 inches high, hand-made, bronze pin and shale beads, on floor of grave (figs. 4, 5, and 6, Pl. xiv.).

P.—Skeleton of woman, about 5 feet 6 inches in height, slightly made and not muscular, on floor of grave, resting on left side, doubled up, left leg higher than right, arms bent up, and probably crossed on breast; line of body N.W. and S.E., face to N.E.; head and body crushed down to 2 inches thickness.

R S.—Seam of charcoal (oakwood), 1 foot 10 inches from surface, parallel to chalk floor, extending, over the whole area excavated, to a distance of 20 feet from the centre.

T.—Fragment of British pottery, hand-made, scored with crossed lines made by the impression of a twisted thong found in seam of charcoal.

EXPLANATION OF PLATE XIV.

Objects from the Black Burgh Tumulus.

Fig. 1.—Flint borer found in tumulus, chipped to a point on both sides.

Fig. 2.—Fragment of rib of goat cut with a flint saw, three notches cut with ditto at one end and one at the other; possibly used as dice (E, Pl. xiii.).

Fig. 3.—Bronze knife-dagger, 4 inches long, found on floor of grave, point to east at M, Pl. xiii., two views (p. 283).

Fig. 4.—Small earthen food vessel 2 inches high, ornamented with two projecting ears on one side, hand-made, found on floor of grave at N, Pl. xiii (p. 283).

Fig. 5.—Bronze pin, square at top and round below, found with earthen vessel at N, Pl. xiii (p. 284).

Fig. 6.—Shale beads found with earthen vessel and bronze pin on floor of grave at N, Pl. xiii (p. 284).

Fig. 7.—Fragment of rim of lathe-turned pottery found at K, Pl. xiii., with small bronze discs (p. 284).

Figs. 8 and 9.—Two small bronze discs of the form of coins, but without any trace of inscription or design, found with the lathe-turned pottery at K, Pl. xiii. (p. 284).

Figs. 10 and 11.—Two views of a flint scraper found in some part of the grave (p. 285).

EXPLANATION OF PLATE XV.

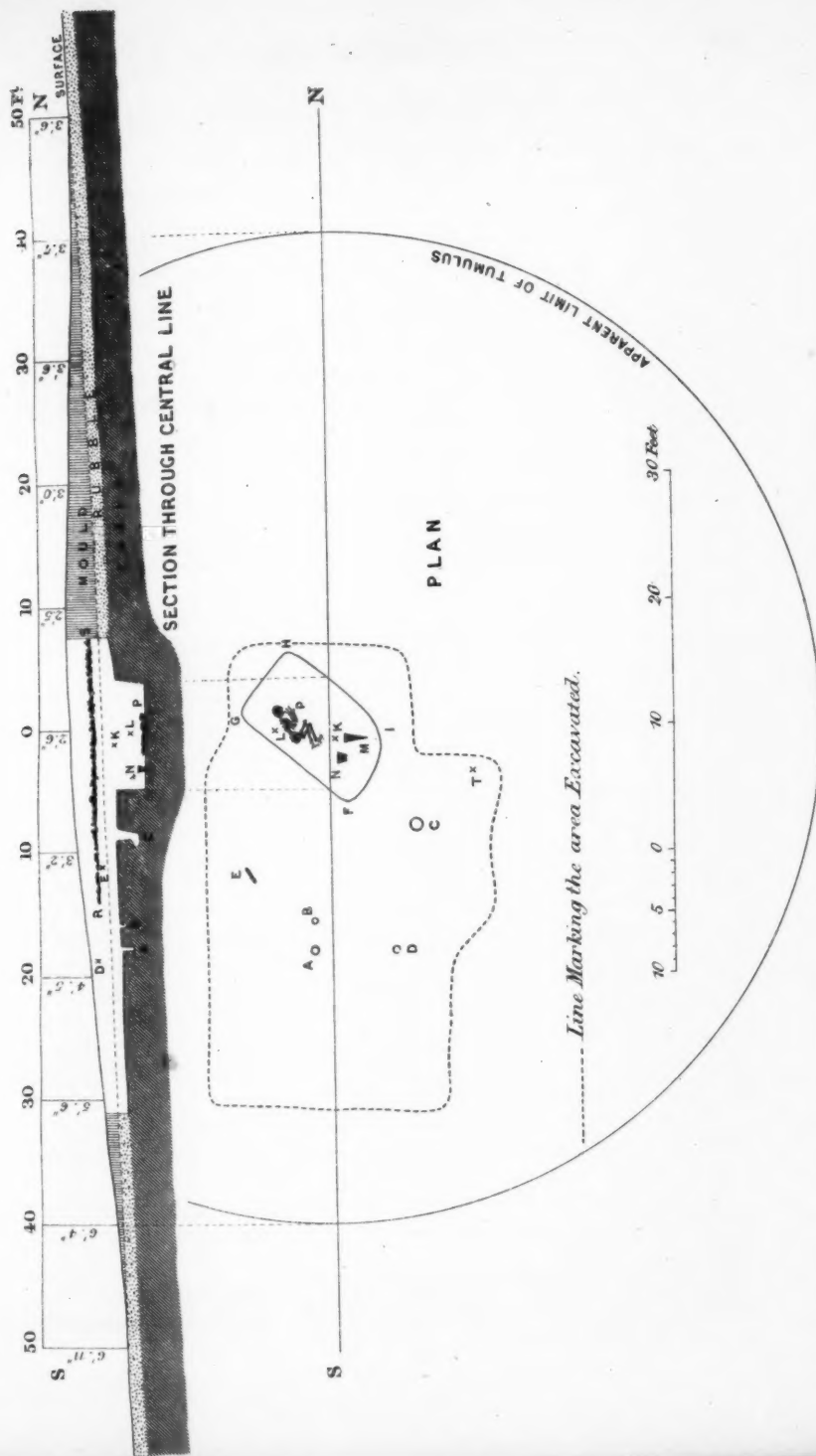
Seaford Camp and Tumulus.

Figs. 1 and 2.—Section on line A B, and plan, showing the position of the tumulus with reference to the rampart, with the part of the tumulus excavated. A, Fragment of British pottery, 2 ft. below surface. B, Chipped flint celt at 3 ft. 2 in. (fig. 1, Pl. xvi.); chipped block at 3 ft. 5 in.; 5 flint saws at 3 ft. 6 in. (figs. 3, 4, 5, Pl. xvi.), on line of floor. Hole in floor, 1 ft. wide and 1 ft. deep, containing a polished flint celt, re-chipped, and numerous flint flakes. C, Hole, 1 ft. by 1 ft.; flint scraper and piece of rim of British pottery. D, Flint scraper at 3 ft. 6 in. E, Large flake chipped from polished celt found in B (fig. 2a, Pl. xvi.). F, Scraper and flakes.

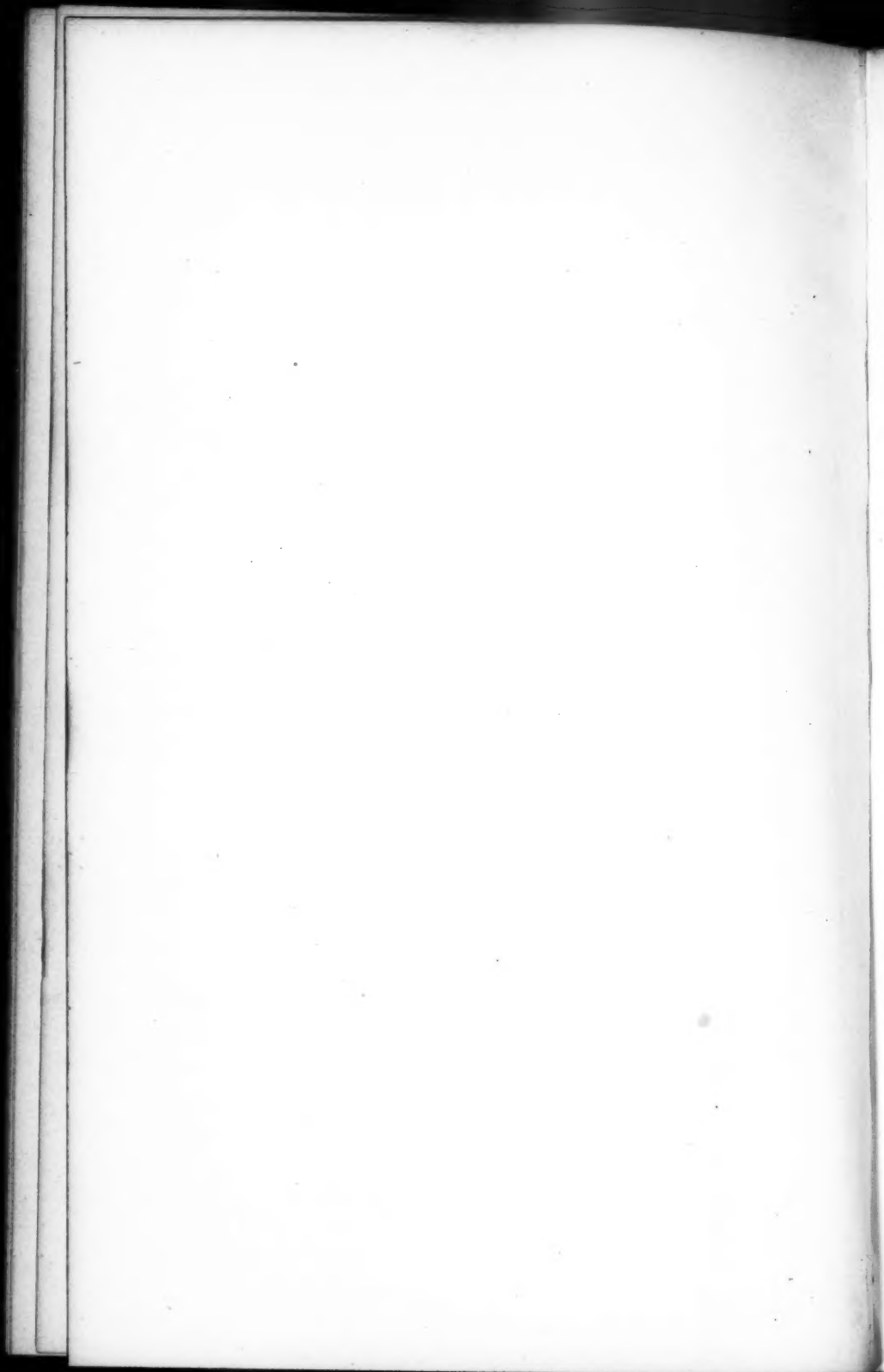
Fig. 3.—Section of ditch and rampart excavated on line C D, showing the depth of mould at the several places, and the chalk rubble in the ditch.

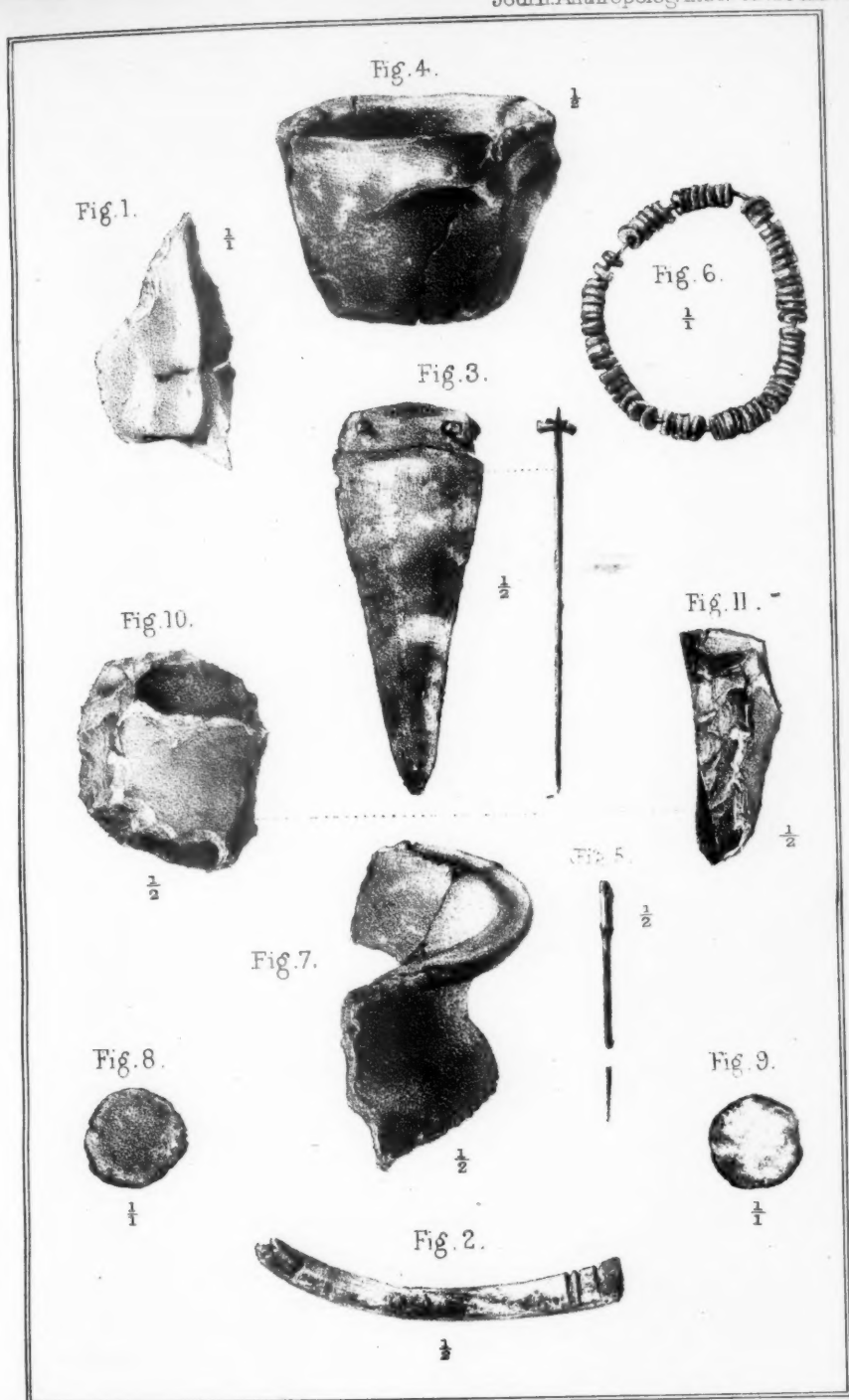
Fig. 4.—Section of hill on the line A B of plan (fig. 1, Pl. xvii.) showing the position of the rampart with reference to the dead ground.

Fig. 5.—Section of hill on the line C D of plan (fig. 1, Pl. xvii.), showing the position of the rampart with reference to the dead ground on that side.



PLAN AND SECTION OF EXCAVATION IN THE BLACK BURGH, TUMULUS, BRIGHTON.





W. H. D. L. E. C.

SEAFORD CAMP AND TUMULUS.

FIG. 1. SECTION THROUGH TUMULUS AND RAMPART.

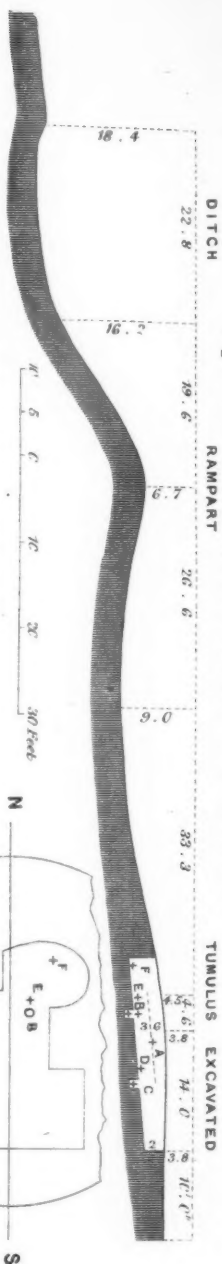


FIG. 3. SECTION OF DITCH AND RAMPART EXCAVATED.

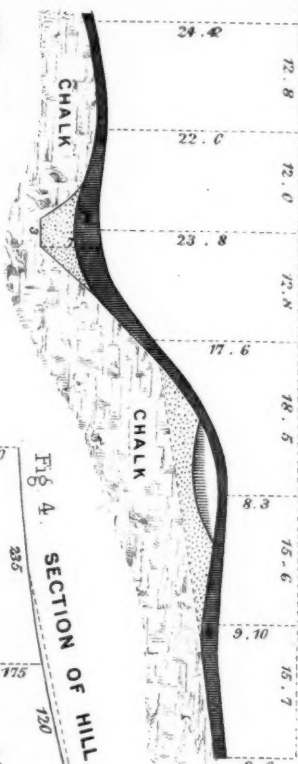


FIG. 2. PLAN OF TUMULUS.

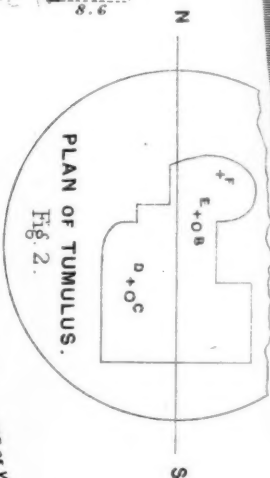
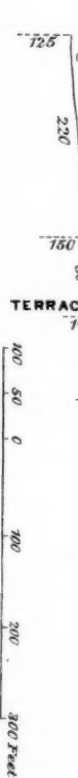


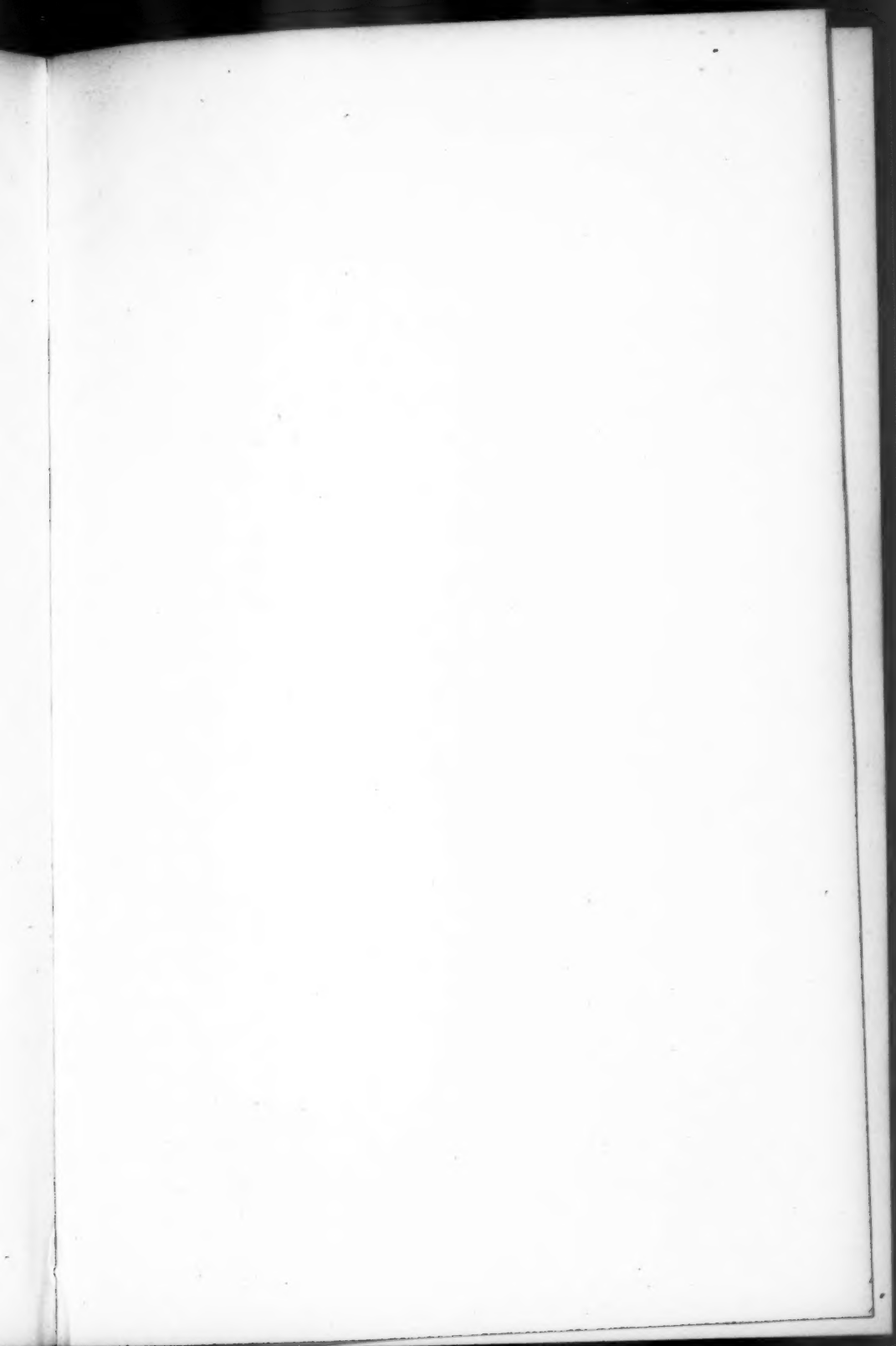
FIG. 4. SECTION OF HILL ON LINE A.B. OR PLAN.

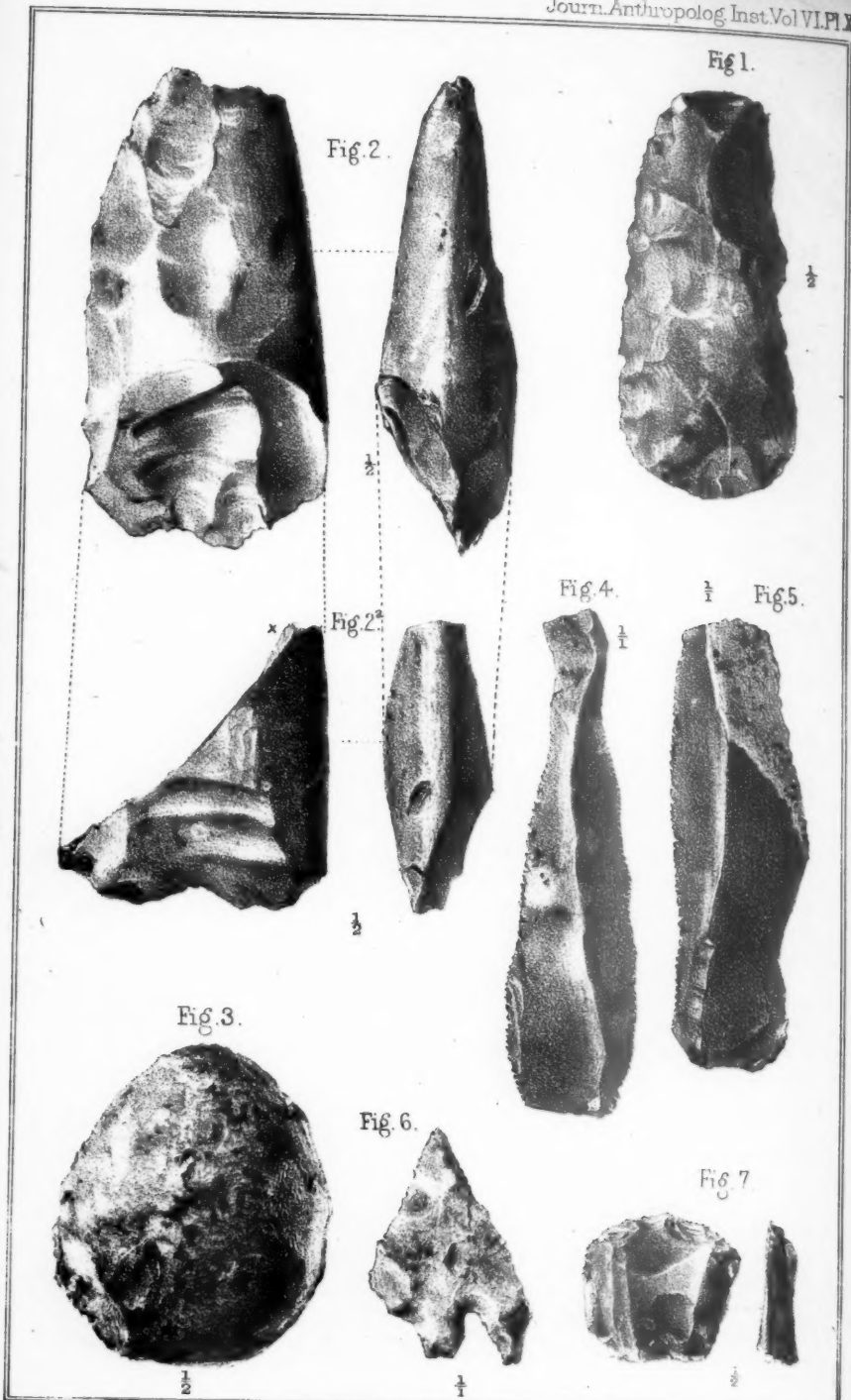
■ MOULD
 ▨ CHALK RUBBLE

The Heights given in Figs. 4 & 5.
 are above mean sea level.

FIG. 5. SECTION OF HILL ON LINE C.D. OF PLAN.







C. F. Kell, Lith. London. E.U.

EXPLANATION OF PLATE XVI.

Objects from Tumulus, Camp, Seaford.

Fig. 1.—Chipped celt, without any trace of grinding, found in or over the hole B (fig. 1, Pl. xv.), 3 feet 2 inches beneath top of tumulus (p. 291).

Fig. 2.—Fragment of polished celt, showing traces of grinding on one side only, broken, and having a rude edge re-chipped; found at the bottom of the hole B (fig. 1, Pl. xv.) p. 291.

Fig. 2a.—Another fragment of the same celt shown in fig. 2, found one foot to the north of it on the floor of the tumulus, 3 feet 6 inches beneath the top. This has formed the lower portion of the celt, which is identified by its colour and striations. The position of the bulb of percussion marked with a x shows that the celt had already been split in half before this fragment was chipped off. The original form of the entire celt is shown by a dotted line (p. 292).

Fig. 3.—Flint hammer, showing marks of hammering in the central part, found in the hole B (fig. 1, Pl. xv. p. 291).

Figs. 4 and 5.—Two of the five flint saws found in the hole B (fig. 1, Pl. xv.), finely serrated at the edge (p. 291).

Fig. 6.—Barbed flint arrow-head found in the body of the tumulus, but position not accurately determined (p. 293).

Fig. 7.—Flint scraper found with urns in the Romano-British cemetery at the foot of the hill (p. 295).

DISCUSSION.

Captain DILLON asked whether the greater height of the parapet at the salient angles of works such as those at Seaford, &c., was not due to the excess of *déblai* over the *remblai*, rather than to any intention of strengthening the works at those points?

The PRESIDENT, in reply to a remark from Captain Dillon, said he had no doubt the excess of *déblai* at the angle would be a means of increasing the height of the rampart at that point, but it would not show that it was not intentional. The increase of the size of the rampart at the weak points was certainly one of the most remarkable features of a British camp. At Puttenham, for example, the size of the rampart at the angle was larger than could be accounted for by the overlapping of the *remblai* at the angle, and excess of ditch round the point, and it was fenced round so as to show that it was intended to be a strong post. Sometimes the line of rampart all along the weak side, where the ground is level on the outside, has two or three ditches and as many banks, as at Mount Caburn and elsewhere. A spot in the rampart at Cissbury, which, from its increased height, is known in the surrounding country as Cissbury Knot, is another example of this system of defence, which in that case is used to defend a weak side near the entrance.

NOTES on the ROMANO-BRITISH CEMETERY at SEAFORD, SUSSEX.

By F. G. HILTON PRICE, F.G.S., F.R.G.S., and JOHN E. PRICE, F.S.A.

By the kind permission of Mrs. Harison, of Sutton Place, and of the Rev. John Harison, Vicar of Bishopstone, we have been allowed to excavate the plot of raised ground near Seaford, commonly known as the Warren, and which has long since been pointed out by tradition as marking the site of a Roman cemetery. The position is so described upon the Ordnance map, and may be identified as being situate on Ham Bank, and defining, as it were, the boundary of an ancient trackway or road known as Green Street, which, starting from near the houses in Lion Place, may still be traced to the ancient property of Chyngton, or Chinting Manor, situate about a mile to the east of Seaford. Almost facing the cemetery another path or roadway may be observed. This is at right angles with Green Street, and runs in a direct line to Sutton Place or Manor,* the present residence of the Harison family. Crossing Green Street, this same path continues its course by the side of the cemetery, and is indicated by the dotted lines on the map as pursuing its course to one of the entrances of the great line of earthworks which exist on the summit of the hill. These earthworks are locally known as the Roman Camp.† They overlook the ancient channel of the river Ouse, and are situate but a short distance from the line of the Ermine Street, which, running from Pevensey and Chichester, continued its course through Surrey to the metropolis. Traditions connecting Seaford with the Roman occupation of Britain, long since led antiquaries to wild speculations as to its early history. An attempt was made to identify it with the

* Four manors formerly existed at Seaford, viz. Seaford, Sutton Sandore, Sutton Peverell, and Chinting, but they have become extinct. That of Sutton Sandore is of great antiquity. It is mentioned in the reign of King John as having belonged to William de Avrenches, who, when imprisoned as a rebel in the year 1216, had to purchase his release by the sale of this manor to the Abbey of Robertsbridge. In the Nunc Returns for "*Sutton juxta Sefford, 1341*," an inquisition was taken as to the value of the church. Some interesting indications of the site of this early building were pointed out to us by the Rev. Mr. Harison, in a field adjoining his residence. Chinting, now represented by a single house, was an ancient township within the jurisdiction of the port of Seaford. The manor belonged, in the reign of Henry III., to Gilbert de Aquila, Lord of Pevensey and founder of the Priory of Michelham. The house is now the residence of W. W. Turner, Esq.

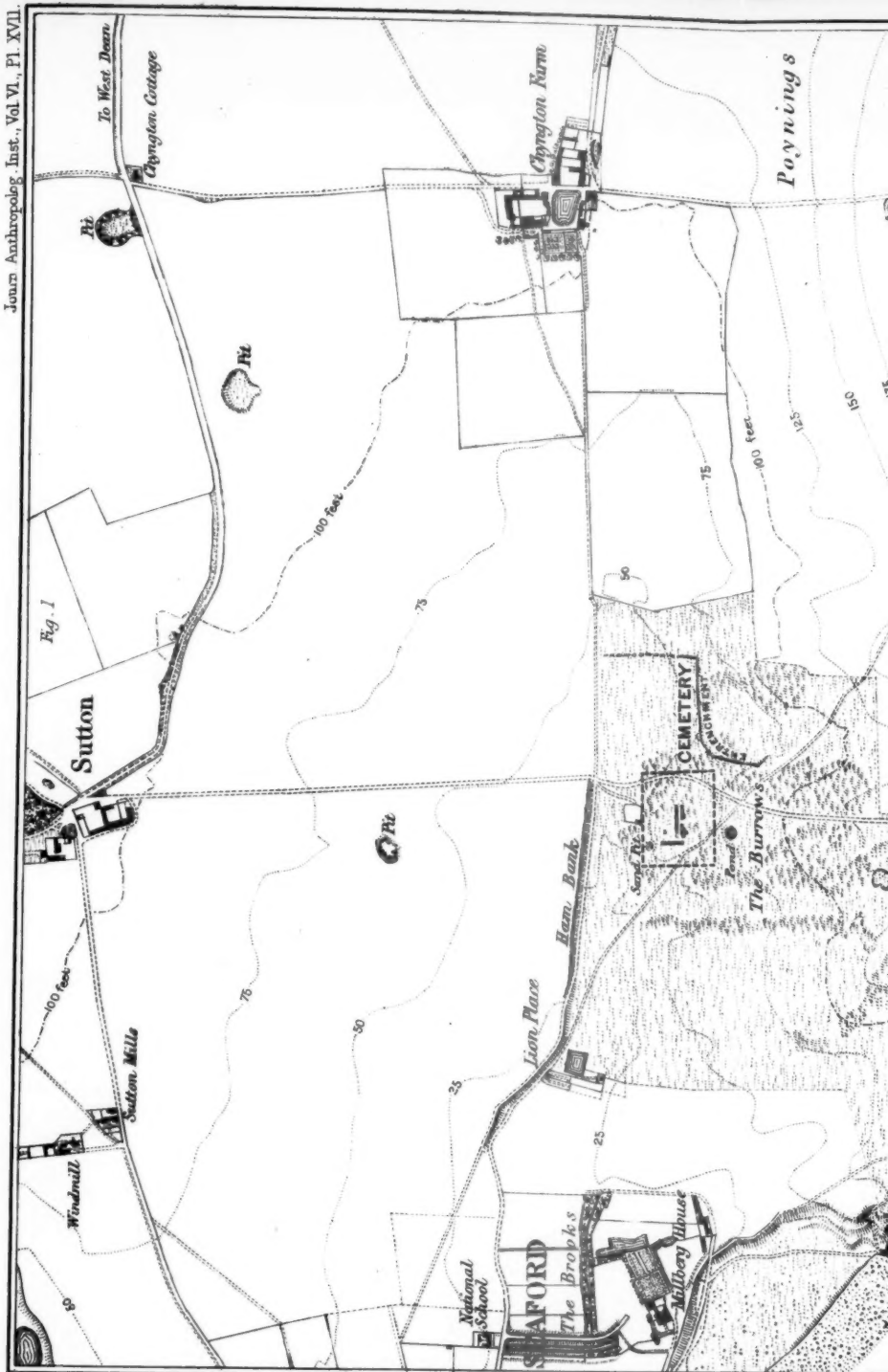
† The "Camp" is said to enclose an area of nearly twelve acres. That at Castle Hill, Newhaven, is about half the size. Similar entrenchments can be traced at Birling Gap. They enclose a high and also isolated portion of the cliff, the circumference of which measures about three-quarters of a mile. These fortified positions were probably, as suggested by the Rev. Edward Turner, in writing on the military earthworks of the South Downs, constructed for the defence of the valleys of the tide-rivers, by the intervention of which the continuous line of the South Downs is occasionally broken.

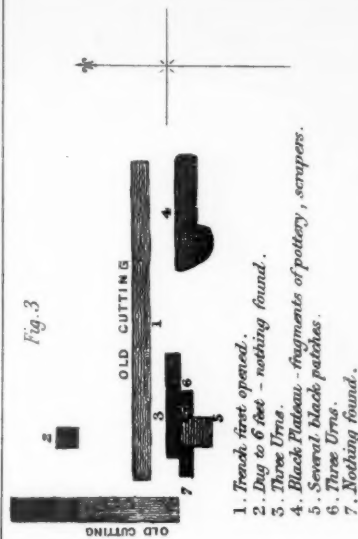
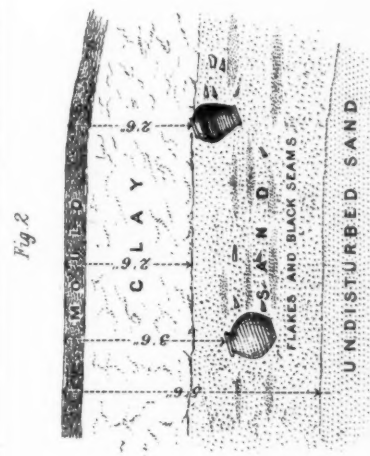
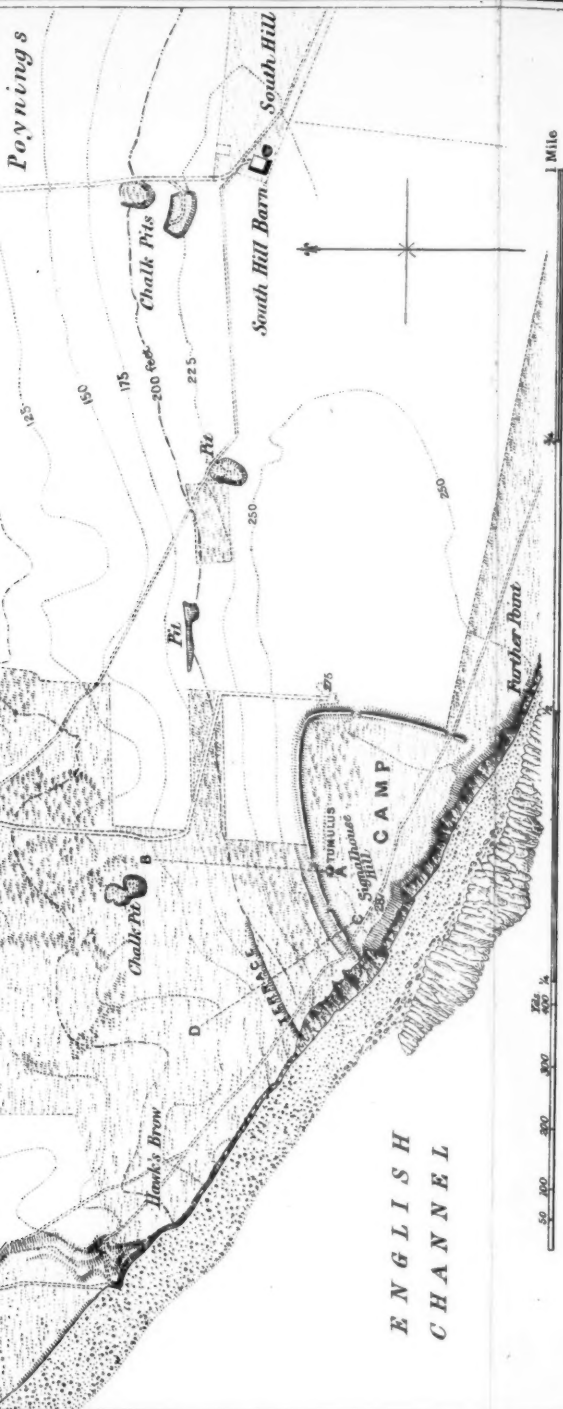
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Castrum of Anderida, mentioned in the "Notitia" as being one of the nine fortresses which once served as a protection to the Littus Saxonicum, or Saxon Shore. This view was ingeniously advocated by the late Mr. Charles Verrall, in a communication published in Horsfield's "History of Sussex," vol. i. page 5; but of late years it has been universally admitted that the wonderful remains still existing at Pevensey alone answer the requirements of the claim.* It has been also suggested that Seaford, if not Anderida, may be identical with the Mercresburn of the Saxon Chronicle, where, in the year 485, a great battle is known to have taken place between the South Saxons and the Britons. The late Dr. Tabor, a physician of Lewes, argued for Eastbourne as marking the site once defended by Ella, the Saxon chief; but a very competent authority on such matters, viz. H. L. Long, Esq., in a letter addressed to the late Mr. M. A. Lower, contributed the following valuable suggestions, which we are induced to quote as being strongly in favour of Seaford. "There is something," writes Mr. Long, "in the name of Seaford which I have often considered likely to throw some light upon the movements of the Saxon forces on their first invasion of our island. After Ælla (A.D. 477) landed at Cymensora, which I am disposed to think was Shoreham, he continued fighting his way to the eastward until he had made himself master of the entire coast, by the capture and destruction of Andredesceaster, or Anderida, in the year 491; but in the interval, A.D. 485, a battle of some importance appears to have been fought with the *Welsh* (*Belgæ*) at a place called *Mercresburn*. This was a river, as the final syllable proves, as well as because the *bank* is mentioned.† The only river of any size in the line of these military operations is your river at Lewes, which then disembogued at Seaford, and which is of course, strategically, the exact place to expect to meet with such a conflict. Now, is not *Seaford* the Saxon translation of the British *Mearcraed*, as it is spelt in the Saxon Chronicle, but which, perhaps more correctly, would be *Mer* or *Mor*—Celtic for 'sea'—and *Rhy* or *Rhyd*, a 'ford'? There appears to be a superfluous *c* between the two words,

* In reviewing this subject, in his "Report on Excavations at Pevensey," 1858, Mr. Roach Smith proves that Anderida must be sought for between Lymne and the river Adur. In such a situation stands the Castrum at Pevensey, and there is no other camp or fortified place that could be substituted in place of it either in this limited track or throughout the whole line of what was called the Saxon Shore. "It must be understood," writes Mr. Smith, "that earthworks are quite out of the question. All the stations mentioned in the 'Notitia' are, or have been, castra built with strong stone walls."

† The passage in the Saxon Chronicle reads:—"An. Cecc lxxxv. This year Ælla fought against the Welsh, near the bank of Mercresburn."

and it requires a Welsh or Armoric scholar to decide whether its introduction is not necessary." That usually far-seeing antiquary, Gough, does not appear to have been in any way familiar with Seaford, for in his edition of "*Camden*" he does not refer to its antiquities; and, had he been acquainted with its numerous illustrations of Roman occupation, it is more than probable that, while not accepting Pevensey, he would have given the preference to Seaford rather than to Newenden, in Kent, when speculating on the site of the long-lost Anderida.*

There is also documentary evidence of the existence of Seaford of a very early character. It is mentioned in the eighth century, among other places granted to the Abbey of St. Denis, near Paris. In the eleventh century it became the lordship of



William de Warrenne, and in the year 1229 we hear of it as a "member," or "limb," of Hastings, one of the Cinque Ports. Edward the Confessor is said to have been the first monarch who bestowed the immunities and privileges enjoyed by the five ports, representatives, doubtless, of the ancient stations to which we have reference as being under the command of the Count of the Saxon shore.

The first recorded discovery of Romano-British remains appears to have been that made in the year 1825, when, quite accidentally, a large number of sepulchral urns were exhumed. Trenches were being cut for the purpose of disturbing the rabbits, who were gradually undermining the ground, and in the

* See "*Memorials of Seaford*," by the late Mr. M. A. Lower. *Sussex Arch. Collection*, vol. vii.

course of these operations the urns were discovered. The late Mr. William Harison, of Folkington, had no less than twenty of these vessels. A selection from them was engraved some years since, in one of the volumes of the *Sussex Archæological Collections*, and we are indebted to the Council of this Society for the loan of the woodcuts for the purpose of comparison with the objects recently found. Since that time several coins have been discovered. They illustrate the reigns of Hadrian and Antoninus Pius, and as recently as the year 1854 a fine gold medal of Antonia, daughter of Mark Antony, was found, not in the cemetery, but in the shingle, below high-water mark. This, we believe, is now in the possession of J. Maxfield Smith, Esq., of Lewes. In the year 1856 a Roman urn was discovered at Cuckmere, in a heap of mould which had been dislodged from its position by a fall of a portion of the chalk cliff on the western side of the river. Traces also of this period were seen at the pond above what was the head of the æstuary, in the direction of Sutton. This was the site of a Roman saltpan; and quite recently it was stated by the late Mr. W. H. Black, F.S.A., that in his survey of Roman Britain he had been successful in tracing the stadia along the coast from Newhaven to this town. With such evidence of Roman occupation, the existence of a cemetery is not surprising. The spot was doubtless selected from its position with regard to Green Street, its close proximity to the camp, and the soft nature of the ground, its situation being upon the top of a natural mound of light sand, forming part of an outlier of the lower tertiary. At the southern extremity of the mound the sand is quarried for building material. Reposing upon these sands is about 3 feet of made earth, and the greater part of the whole area is now overgrown with furze bushes.

The operations of the committee were commenced on the 5th June last. Our President, Colonel Lane Fox, F.R.S., E. W. Brook, F.S.A., and ourselves were present. The trench first cut was from east to west, it being a likely spot, as suggested by the Rev. John Harison, who informed us that it was near the site where the fine urns were discovered in the year 1825. Three men were employed at this place for the greater part of a day (this section is marked No. 1 on the plan), without any success at all, although we cut down to the virgin soil. We next made a



cutting, about 6 feet deep, at the spot marked 2, but there likewise without any favourable result.

Our attention was next turned to the eastward portion of the cemetery (section iii.), where we cut a trench about 5 feet deep, through about 3 feet of disturbed soil, which is filled with flints, stones, bits of pottery, flint flakes, &c. We soon became aware that we were on likely ground, by the presence of small black patches in the sand, and which we found was caused by charcoal and ashes. A large piece of a broken urn was shortly discovered, with portions of another. Simultaneously with the opening of No. 3 trench, we commenced a trial cutting north and south, at No. 4, particulars of which will be given further on. In section 3 a perfect urn* (No. 1) of red ware was met with at a depth of 3 feet 6 inches below the surface. Upon cleaning it, it fell in pieces, but was subsequently mended. It measures $32\frac{1}{2}$ inches round the widest part, 15 inches round the base, and is 11 inches high. This urn contained a secondary interment, and bears marks of being turned upon a lathe. There is no ornamentation. Urn No. 2† was discovered close to No. 1, and is the most ornamented one that we have yet met with. It is of dull red ware, rudely embellished with tooled markings, contained within deep concentric lines, and partly by bands caused by its being turned upon a lathe. It is $9\frac{1}{2}$ inches high, 30 inches in circumference at the shoulder, and 14 inches round the base. It contained fragments of bones.

No. 3 urn‡ from the same section we were not so fortunate in getting out entire, it being in a very fragmentary condition and consisting of pottery of a light red colour. It is ornamented with two irregular lines round the shoulder, worked with a tool into the form of half hoops, resting upon concentric furrows. It is $8\frac{1}{2}$ inches high, $26\frac{3}{4}$ inches round the widest part at the shoulders, and $13\frac{1}{2}$ inches at the base. It contained the usual amount of bones.

No. 4 urn was still more fragmentary. It is of a brownish red ware, with deeply-tooled furrows round the shoulder, in which part the pottery is much thicker than in the others. It bears marks of having roughly tooled ornamentation above the shoulders. Fragments of bones, &c., were found with it.

On the 11th September the excavations were resumed with three labourers. A trench was cut from north to south to a depth of about 5 to 6 feet; the upper surface of the ground was made earth. At the depth of 3 feet from the surface we found flint scrapers, flakes, and fragments of early pottery, which is of a very coarse description of native work. At this depth a black seam occurred, which we cut into, and traced it out for about 4

* See fig. 1, Pl. xviii. † See fig. 2, Pl. xviii. ‡ See fig. 3, Pl. xviii.

feet horizontally. It contained a large number of rough flints, pebbles, some of considerable size, fragments of pottery, bits of charcoal, &c. They all bore evidence of having been submitted to great heat. Much of the clay was red, and had the appearance of rotten roof tiles. As no bone ashes were distinguishable at this spot, we came to the conclusion that this was the place where the funeral pyre was erected. Among the flints we noticed two round flint balls. These may possibly have been used as sling-stones. There were no indications of bones, and this would be accounted for, presuming the spot to mark the site of a *ustrinum*. It was sometimes the practice of the Romans to wrap the corpse in a sheet of incombustible material, so that, being unconsumed, the bones of the deceased would be all preserved, and at the same time be prevented from mixing with the coals and ashes of the pyre.* Upon finding this blackness of the ground gradually assume its normal appearance, we turned our attention to further opening out that portion of the cemetery where the urns were met with in June last. Having set one man to make a trench at No. 5, about 6 feet deep from east to west, two other men were employed to cut back the ground to meet him at No. 6. For matters of convenience we have numbered these sections. In No. 5, at a depth of 4 feet from the surface, many black patches of *small* extent were found in the sand. They were all at the same level. These were evidently the ashes collected after cremation, as in some of them fragments of bones were observable. These may have been enclosed either in urns or in cloths which have perished, or by wooden coverings† that have met with a similar fate. In one of these patches a bronze nail was found, and in others a flint flake.

What did these interments point to? Were they the remains of people whose relations were unable to find an urn in which the remains would be preserved, or were the relics those only of slaves who had been sacrificed upon the funeral pyre of some great chief or person of authority, and whose remains were placed in an urn in close proximity, as a few feet further in towards No. 3, urns more or less perfect were found. The latter was a common practice, as is recorded by Mr. Llewellyn Jewitt in his "*Grave Mounds and their Contents*." On page 35 the following remarks will be met with: "In instances where the ashes of the dead have been collected from the funeral pyre and laid in a skin or cloth before interment, the bone or bronze pins with which the 'bundle' was fastened still remain, although, of course, the cloth itself has long since perished. In other instances small stones have been placed around, and

* See "*Inventorium Sepulchrale*," Fausett, p. 195.

† See fig. 3, Pl. xix.

upon the heap of buried bones before raising the mound over the remains. It is frequently found in barrows, where the interment has been by cremation, that there will be one or more deposits in cinerary urns, while in different parts of the mound, sometimes close by the urn, there will be small heaps of burnt bones without any urn. The probable solution of this is, that the simple heaps of bones were those of people who had been sacrificed at the death of the head of the family, and burnt around him."

The bronze nail now found may therefore have been used in place of a pin to fasten together the ashes of the deceased in a sort of cloth or napkin. In the absence, however, of further illustrations, which we may get in future discoveries, this application of the nail is far from certain. Nails were sometimes employed to fasten together boxes or coffers, to contain either personal ornaments for interment, or even for the charred remains of the individual. Bronze nails are less common than those of iron. Representatives of no less than five varieties are given by Mr. Roach Smith, as occurring among the remains at Richborough.* They are at times richly ornamented, and were probably used for decorative work. The bronze pins usually found in such interments as the present are generally without heads. Dr. Thurnam mentions such objects as having been observed by Sir Rich. Colt Hoare in no less than thirty instances, and, with the exception of five, all were from interments by cremation, and with which they were often the only objects. It was assumed by Sir Richard that they were for securing the bundle in which the remains were enveloped; but careful comparison, says Dr. Thurnam, leads to the conclusion that they were implements carried about by their owners which, from their small size, were peculiarly liable to be committed with the body to the grave or pyre, as the case might be.†

In cutting "6," near to the left-hand corner, between 3 and 4 feet deep, we met with a large urn‡ of thick, dark brown pottery. It was much cracked, and the shoulders were broken in by the pressure of the earth above. We were successful in getting it out well, but immediately we began to take out the contents, which were much caked in, the sides gave way in the line of the old cracks. This urn had been rudely repaired before being placed in the ground. It measured 15 inches round the base, and about 25 inches round the middle, and was perfectly plain, having no ornamentation.

Besides the fragments of bones that were in the urn, there were three nails with large heads, and a fragment of metal,

* See "Richborough, Reculver, and Lyme," by C. R. Smith.

† *Archæologia*, vol. xliii. page 465.

‡ See fig 4, Pl. xviii.

which might have been a coin, or a portion of a fibula, or some other ornament, and a flint flake.*

Within a few feet of the same spot another urn was found, a small one of red ware, thin, having a row of small, vertical, black painted lines upon it, probably round the shoulder. The urn was so rotten that it was all in fragments when discovered, but the whole contents were carefully picked out on the spot. In addition to the usual bones, it contained a bronze fibula,† shaped like a bird's tail, attached to a round disc, which probably was intended to represent the body; the pin was wanting. This specimen affords a good instance of what the Saxons afterwards copied and elaborated.‡ Two small flakes were among the ashes, and a piece of jet.

Another urn, so much crushed that it was impossible to do more than pick out the pieces, was found within a foot of the latter. It was of black pottery, thin, having two concentric lines or furrows round the widest part, with diagonal markings between. In addition to the ashes and pieces of charcoal, it contained a pin of a fibula, a nail, a small lump of fused metal, probably the fibula or coins, and one small flint flake.§

Several other spots were met with at the No. 3 end of cuttings 5 and 6, where the sand was perfectly black from the ashes, but only a fragment of pottery was now and then met with in these patches, with a few small fragments of bone. In one of these black patches, a nail, a flint flake, and a corroded piece of bronze, were met with, which might have been the remains of a fibula; also fragments of what appeared to be burnt slates were occasionally seen.

Of the iron nails referred to, they are but of small size, but at times such objects have been found of considerable length. They have been thus observed in London, Colchester, York, and other places. In Mr. Roach Smith's "*Collectanea Antiqua*" (vol. 3), he devotes an interesting chapter to the illustration of the subject. He refers also to such nails as have now been found, as having appeared among the remains of bodies, which have either been burnt and deposited loose in the graves, or enclosed in urns of clay or glass. He quotes an example from a walled Roman cemetery discovered by the late Mr. C. Taylor

* See figs. 10, 11, 12, 13, Pl. xix. The fibulae shown in figs. 1 and 2, Pl. xix. were found loose in the earth at the time of the diggings, and there was no evidence to show that they had been in any urn.

† See figs. 4, 5, and 9, Pl. xix.

‡ They strongly resemble certain bronze fibulae found some years ago in the Crimea. In some excavations at Kertch, Dr. Macpherson found several such objects, accompanied by human remains. They are many of them in the British Museum, and are described and illustrated by Mr. Roach Smith in the fifth volume of his "*Collectanea Antiqua*."

§ See figs. 6, 7, 8, Pl. xix.

Smythe, in Lockham Wood, near Maidstone, and excavated under the direction of that gentleman and Mr. Charles, of Chillington House. There was discovered a large number of vases, in one of which, of about the capacity of a gallon, was an iron nail in the midst of calcined human bones; it was perfectly free from rust, 2 inches long, and precisely similar to those of the present day. Mr. Wright also found many long nails in a large barrow near Snodland.

The presence of flint flakes or implements in the urns is a feature of considerable interest. Apart from instances of actual burial in the urns, they have appeared in large numbers among the charred remains, and were scattered about here and there, associated with broken pottery. Such conditions have been noticed by barrow-diggers in other parts of England. Dr. Thurnam mentions, among his Wiltshire researches, the presence of flint flakes and potsherds in considerable numbers, and usually in close proximity to the interments. They are traces, he writes, of a pagan custom, which is illustrated by the well-known line in *Hamlet*, of

"Shards, flints, and pebbles."

Various explanations of this practice of burying flint implements with cinerary urns have been given. Some attribute a symbolical meaning to both the potsherds and the flints; others suppose the sharp flints to be the knives with which the survivors lacerated themselves in signs of grief. On the whole, perhaps it is probable that the object in view was to lay the ghosts of the dead, and restrain them from walking the earth, it being asserted that flints, and other stones from which fire might be extracted, were efficacious in confining the manes to their proper habitations.*

At Alfriston, a village at no very great distance from Seaford, there existed a large barrow no less than 55 yards long. It is referred to by Gough, who also describes certain smaller tumuli and their contents—in one case an urn of unbaked clay, rudely ornamented, and containing bones and ashes. This was placed beneath a pyramid of flints.

Of the pottery but little need be said. It is rough in character, is probably of native, and perhaps of local manufacture. It resembles in every respect the earthenware that is usually met with in interments of this description. The vessels are for the most part such as would be in daily domestic use, and in the great variety that has been met with, we may have an indication that the cemetery—the first almost of its kind

* Compare Douce's "Illustrations of Shakspeare," 1807, ii. 224; Arch. Journal, xiii. p. 117; Archæologia (Rolleston), 42, p. 428; Archæologia (Thurnam), vol. 43, p. 422.

Fig. 4



Fig. 1

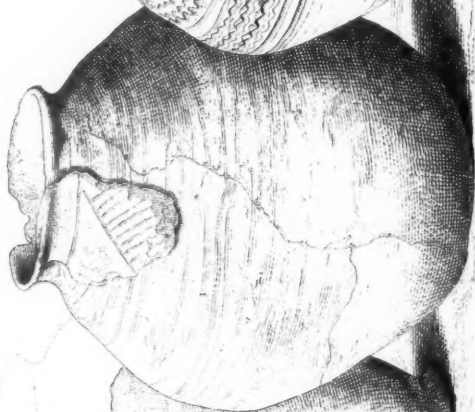


Fig. 2

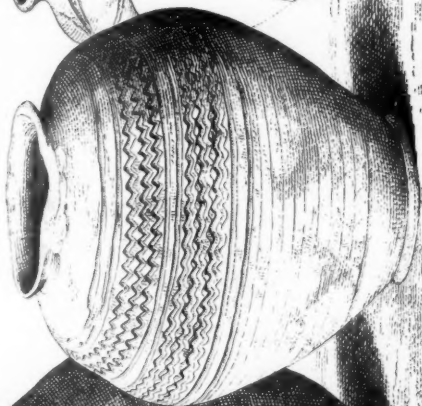
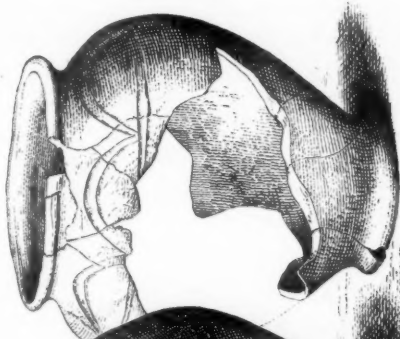
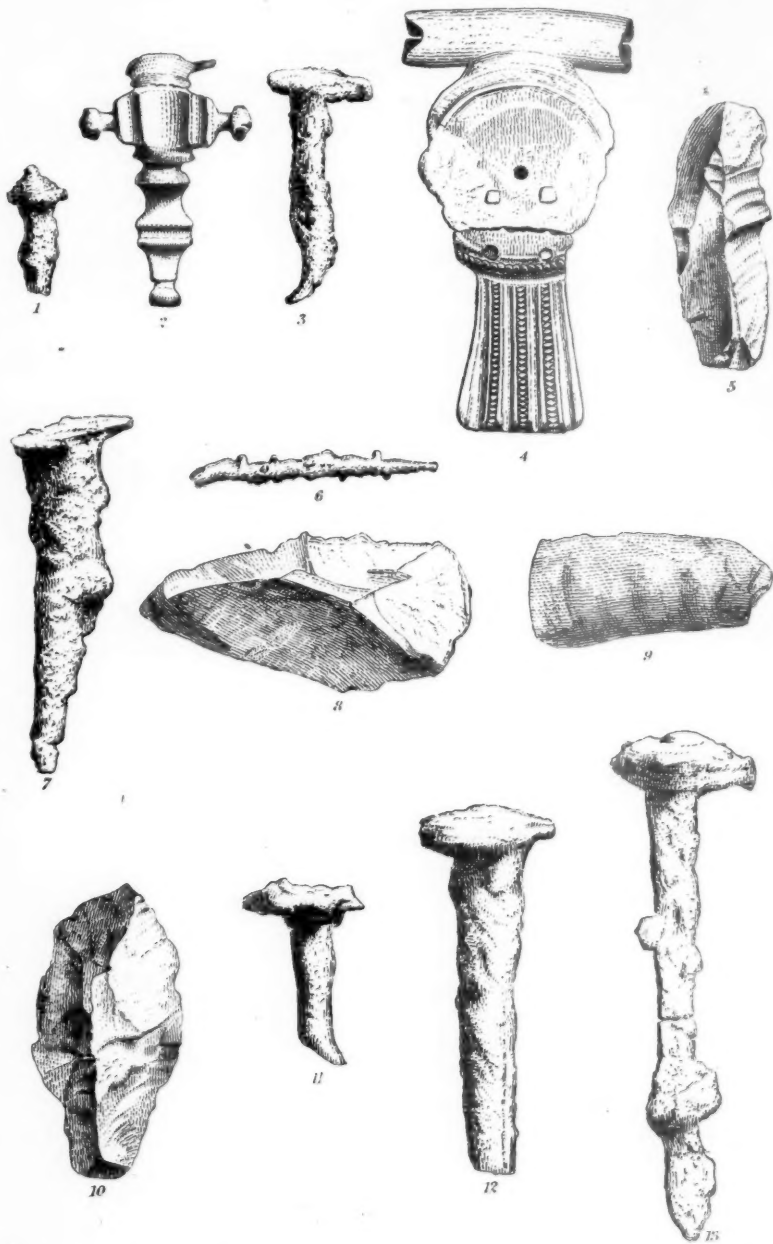


Fig. 3





J. P. EMBLE, DEL.

J. P. & W. R. F. PRESS, LITH., LONDON.

that has been found in Sussex—may prove to be of far greater extent and interest than has been hitherto supposed, but much more remains to be done, and it must be admitted that the work belongs to labourers in the field of archæology rather than in that of anthropology. At the same time, the border-land between the two sciences is, to say the least, somewhat indefinite and obscure. Whatever information can be obtained to the advancement of the one can hardly fail to be of service to the other. No accurate knowledge of any site can be gained except by careful investigation of the place itself; and if, from the results of such exploration, we are enabled to derive additional knowledge of the habits and customs of the varied races who have lived and died upon this island, and who in each generation have left some distinctive features and characteristics that have influenced their successors, the accumulation of such facts must be of indirect service to anthropology, if not in its highest aims, yet of sufficient value to justify their record in the proceedings of the Institute.

NOVEMBER 28TH, 1876.

Colonel A. LANE FOX, *President, in the Chair.*

The minutes of the previous meeting were read and confirmed.

The election of two new members was announced.

The following presents to the Library were announced, and thanks were voted to the respective donors:—

FOR THE LIBRARY.

From Prof. AGASSIZ.—Bulletin of the Museum of Comparative Zoology. Cam., Mass., U.S. America. Vol. III. Nos. 11—16.

From the SOCIETY.—Transactions of the American Philosophical Society. Vol. XVI. No. 97.

From the SOCIETY.—Proceedings of the Royal Society. Vol. XXV. No. 174.

From the ACADEMY.—Transactions of the Academy of Sciences of St. Louis. Vol. III. No. 3.

From the BOARD.—Seventh Annual Report of the State Board of Health of Massachusetts. 1876.

From the EDITOR.—*Révue Scientifique*. Nos. 21 and 22.

From the EDITOR.—*Nature* (to date).

The following exhibitions were made:—

A Mexican hammock, which had taken the first prize at a hammock show in the city of Mexico, 1876. Exhibited by Miss GRAHAM.

Three limbings or spears, one with a wooden sheath to the head; a sundang or long creese; and a golok or jungle-cutting knife—all from Kobah Lama, near Qualla Kangsar, Perak. Also two clubs, ornamented with feathers, of the Accoway tribe, and one four-sided club of the Carabisee tribe, from British Guiana. The above weapons were exhibited by permission of Captain BURGESS.

A Bosjeman skull, exhibited and presented by Mr. EDWIN CANTON.

Several terra-cotta votive statuettes from Tanagra, exhibited by Col. LANE FOX, by permission of MM. Rollin and Feuarent.

The PRESIDENT then read the following paper on the last-mentioned exhibition:—

EXHIBITION OF VOTIVE STATUETTES *found at TANAGRA, BEOTIA.*
By Col. A. LANE FOX.

I EXHIBIT this evening, through the kindness of Messrs. Rollin and Feuarent, a series of terra-cotta statuettes lately discovered at Grimadha, the ancient Tanagra, in Beotia, which, not only on account of their artistic merits being of the best period of Greek art, but also on account of the interesting question arising from their association with the interment of the dead, appear worthy of the attention of anthropologists. I should mention that my information respecting these objects is drawn from a paper by M. Rayet, Professor of Greek in Paris, addressed to the *Gazette des Beaux Arts*.

Tanagra is situated in the valley of the Asopus, about 10 English miles from its junction with the channel of Egripo, and facing Mount Parnes, which is on the opposite side of the valley, to the south. It is some 15 miles or more to the east of Thebes, and 25 miles or thereabouts to the north of Athens. It is described by Dicearcus and Pausanias as standing high, and surrounded by escarpments, with temples situated on terraces, and houses ornamented with encaustic pictures. It was the birthplace of the poetess Corinna, and a tomb was erected there to her memory.

At present but little remains of the town; the ruined walls, built partly of rectangular and partly of polygonal blocks, present the appearance of a town of considerable extent. In the interior nothing is seen but some terraces, a few foundations, and a theatre in a state of great decay, with a few constructions of brick of the Roman era. The country around Tanagra is now entirely deserted and untilled, and it is rarely visited by travellers.

About five years ago the inhabitants of the villages of Bratz

and Skhimatari, in the valley of the Lari, close by, discovered a number of tombs in the fields which had never been opened. They consisted of stone troughs, about 6 to 7 feet in length, and a little less than 3 feet in depth; the sides were from 20 to 30 centimetres thick, and each of these coffins was covered by three transverse slabs, which sealed it hermetically. They were found to be of two different ages; in both, the stone coffins were of the same size and external appearance, but they differed greatly in their contents. The earlier ones contained a number of vases of the style formerly termed Corinthian, but which are now known not to have been confined to Corinth, but to have been prevalent in other parts of Greece, and even in Etruria, in the archaic period, ornamented with representations of animals, more or less boldly drawn, and the impression of signs and symbols, the style of which had probably its origin in Lydia and Phrygia. In the same ancient part of the necropolis were also found small earthen figures of inferior workmanship, rudely modelled, and composed of clay badly kneaded and full of pieces of flint. They represented people in a standing position, and the women were only to be distinguished from the men by the long tresses falling over their shoulders. They were painted for the most part black and yellow.

Not far from this part of the cemetery, and close to the village of Skhimatari, the name of which it may be observed *en passant* (Σχηματάριον) signifies by its etymology the manufacture of little figures (σχηματα), another set of coffins of later date was discovered. The stone coffins found here were constructed in exactly the same manner as the others, from which they could not be distinguished externally, but the sides in the interior were lined with a coating of stucco about half a centimetre in thickness or thereabouts, and decorated with paintings representing generally architectural ornaments, but sometimes landscapes or hunting scenes, painted in colours which were often quite fresh when first exposed to the air. The skeleton was at the bottom of the sarcophagus, but instead of the numerous vases found in the earlier graves, one only was found in these close to the head, of large size, more than a foot in height and quite plain, without figures or ornamentation, evidently intended to contain drink for the dead. Most of the coffins had nothing else in them, but some, evidently of the richer class, contained in addition a certain number of terra-cotta statuettes, of which those now exhibited are specimens. Usually not more than one or two were found, but sometimes five or six, placed wherever any space was found between the skeleton and the sides of the sarcophagus; sometimes broken, and at others erect and entire; sometimes damaged by weathering, but occasionally,

when the tomb had been hermetically sealed, the paint upon them was as fresh as on the day they were interred. Besides those found in the coffin, others were sometimes found in the soil surrounding it, occasionally to the number of 20 or more, and with one interment as many as 50 figures are said to have been discovered, but, unlike those in the interior of the coffin, they were generally broken into small pieces by the effects of moisture and other destructive elements. The statuettes averaged from 6 to 10 English inches in height, the largest being 15 inches high, and the smallest 3 inches. The front part only is modelled with care, and at the back there is usually a rectangular aperture, cut while the clay was soft, which was made to facilitate the evaporation of the moisture and admit the heat of the oven uniformly into the hollow interior. The majority of them have been placed upon a square plinth before baking, so that the adhesion is not very strong, and they are easily removed from it by a blow.

All the statuettes have been originally formed in a mould, but their artistic value arises from the fact that every one has been re-touched and perfected by the fabricator before the clay hardened, so as to give an individual character to each. The expression of the countenance, of which many different phases are seen in the specimens exhibited, appears in each case to have been added afterwards, and some of the heads have received so much attention that they may almost be said to have been remodelled. One of the female statuettes which is now in my collection deserves special attention on account of its beauty and attitude of repose. The body is thrown backwards on the right leg, as if listening to some communication whispered in her right ear, and which, from the expression of the countenance, appears to be received with favour. The head, to counterpoise the position of the body, is inclined forward, and slightly to that side. The left elbow is supported in an easy position in front of the body by the right hand, and in her left hand she holds a fan in front of her face. Nothing could better exemplify the refinement of the age than the attitude of this figure. It is far removed from anything that could be seen at the present time amongst the beauties of our casinos and music halls, and we are impressed at the first glance with the fact that there were ladies in Greece in those days.

Some of the figures are evidently copies of the same original, although formed in different moulds. Others can be recognised as having been turned out of the same mould, and by a comparison of these it is easy to determine how much is due to the uniformity of the mould on the one hand, and to the subsequent manipulation of the artist on the other. All the salient parts,

the accessories, the coiffure, flowers, and objects held in the hand, are subsequent additions.

All the figures without exception were coloured from head to foot. For the clothing the chief colours employed were blue, red, and a kind of rose-tint. The blue is a silicate of copper; the red an oxide of iron. Besides these are found more rarely violet, green, white, grey, black, and yellow. The hair is always painted a brownish red colour, by which means the artist appears to have reproduced, in so far as the poverty of his palette enabled him, the brilliant golden chesnut colour which, according to Dicearcus, was the ordinary tint of the hair of the Beotians, and which, according to the author from whom I quote, is still seen at the present day in those parts of Greece where the race has preserved its purity. There is evidence that these works of art are the production of different artists, and M. Rayet believes that, in addition to Tanagra, manufactories of them were established at the adjacent towns of Thisbe and Aulis.

M. Rayet considers that the whole series of figures are the work of one period, and that they were produced during a comparatively short space of time. Nowhere do we see any indications of a transition from the conventional Asiatic style that is found in the earlier graves, nor are there any indications of decay; and although the proportions are faulty in some of the inferior specimens, all appear to belong to the best period of Greek art—at a time when the artistic sentiment had already reached refinement, and the powers of the humblest workmen were stimulated by the sight of innumerable masterpieces.

There is great difficulty in determining the age, owing to the unfavourable circumstances under which explorations of this kind are conducted in Greece, where the exportation of works of ancient art are prohibited, and excavations have necessarily to be made secretly; but from all the information that is accessible, it appears that they may be attributed to about the fourth century before Christ.

But the point which serves chiefly to render these figures of interest to anthropologists is the question which has been raised as to the objects which they were intended to serve in the graves. The well-known custom of inserting in the graves of the archaic period statuettes representing deities has led some persons to assume that those of a later age also represented the gods of the Greeks. Accordingly the characteristic peculiarities of the several figures have been studied by competent authorities from this point of view. One has been attributed to Hermes, another to Demeter, a third has been said to represent a Gorgon, and so forth. But, in opposition to this opinion, the director of the German school at Athens, and with him

most of the Athenian archæologists, who have had the best opportunity of studying the figures with all the circumstances connected with their discovery, have come to the conclusion that, viewing the individuality observable in the expression and attitude of the statuettes, the ornamentation, costume, and the objects held in the hands, there is nothing to indicate that they have any mythological import, but represent merely the figures of persons who were familiar to the domestic life of Tanagra at that time. They believe that they were originally constructed to ornament the dwellings of the people, and at death were deposited by their friends as objects with which the deceased person had been associated in his lifetime, and as representing the pleasures which it was hoped might accompany him in the future state.

To this view M. Rayet further adds the hypothesis, that as the practice of immolating at death the wives, slaves, and dependants of the deceased person had no doubt existed amongst the early Greeks as amongst others whose ceremonial customs were derived from the East, these figures are to be regarded as the substitutes for live offerings, which in the course of time were introduced, in the survival of this custom. It may however, I think, be doubted whether the transition here supposed from the victims themselves to the images of them is not more abrupt than analogy would lead us to consider probable. Intermediate phases would probably intervene; animals would in all probability be substituted in the first place, or the offering up of animals would survive the offerings of human beings, and by this means the superstition would be directed into another channel. It is difficult to conceive that so important a change as the abandonment of human sacrifices could be bridged over by a subterfuge of this kind. On the other hand, parallels are not wanting in Oriental rites which might lead us to believe that such a change as this might actually have taken place. Mr. Franks, whose rich store of anthropological knowledge is so rarely at fault in such matters, has referred me to a passage in Jacquemart's "*Histoire de la Ceramique*," 1873, p. 92, which is as follows:—"There lived about the Christian era in the province of Idsoumi, Japan, an athlete of the name of Nomeno Soukouné, who used to make earthenware, and produced images to substitute them for the slaves which till then it was usual to bury with their masters." Mr. E. B. Tylor, quoting Siebold,* says that "the Japanese form of modern survival of human sacrifices at funerals is to substitute for real men and animals images of stone or clay or wood placed by the corpse;" and he also says that in China "the ceremony of providing

* "*Primitive Culture*," vol. i. p. 418. Siebold, "*Nippon*," v. p. 22.

sedan bearers and an umbrella bearer for the dead, and sending mounted horsemen to announce beforehand his arrival to the authorities of Hades, although these bearers and messengers are only made of paper, and burnt, seem to represent survivals of a more murderous reality."

Notwithstanding this, however, it still appears to me more probable that as we know the practice of depositing the images of the gods prevailed amongst the early Greeks, whereas the custom of human sacrifices is, to say the least, doubtful, the use of the images had its origin in mythological sources. Take, for instance, the case of the Scythians, whose custom of offering up the wives and dependants of the deceased was probably derived from the same source, assuming that such a custom did actually exist in Greece. Herodotus* says that in the open space around the body of the king they buried one of his concubines, first killing her by strangling, and also his cup-bearer, his cook, his groom, his lacquey, and his messenger, six in all, besides a horse and other objects. In the tomb of a Scythian king, opened at Kertch by the Russian Government in 1832, and described by Dubois in his "*Voyage Autour du Caucase*,"† there were found in the space outside the sarcophagus of yew wood which contained the king, the skeleton of his queen, with one of his attendants, and a horse; inside the sarcophagus, with the king and his weapons, were five small statuettes of electrum. The objects in the tomb showed abundant traces of Greek influence, and are attributed to about the same period as the Tanagra images, viz. about B.C. 400—350.‡ "Greek ideas had apparently modified the old barbarism so far as to reduce the number of the victims at the king's death from six to two," and it might perhaps be assumed, upon the human sacrifice hypothesis of the origin of these figures, that the five statuettes found inside the sarcophagus with the king were the substitutes for the remainder of the victims of which Herodotus speaks; but, according to the accounts given by both Dubois and McPherson,§ these statuettes represented Scythian deities: one amongst them being recognised as the Scythian Hercules.

In more civilised regions the sacrifice of the wife and attendant would be dispensed with, but the statuettes of the deities would be continued. By degrees the belief in the gods would die out, but the use of the votive images would be preserved, their significance would be changed, and in place of statuettes representing the gods, the ordinary household figures in vogue at the time would be substituted. This last stage in the develop-

* Herodotus, Book iv. chap. 71.

† Atlas, 4me. série, pl. xviii.

‡ Rawlinson's "Herodotus," vol. iii. p. 51.

§ "Antiquities of Kertch," by Duncan McPherson, M.D., p. 63.

ment of the superstition appears to have been reached in Tanagra at the time of the fabrication of the figures before us, which are obviously devoid of any mythological signification.

As bearing on this view, it may be mentioned that the statuettes are almost invariably females, rarely are male figures found. It would be interesting if it could be ascertained whether the female figures were associated with graves of men, but the unfortunate conditions, to which I have referred, under which Greek explorations are conducted appear to have precluded the possibility of making this observation.

The subject, however, is one upon which different opinions may be entertained, and useful information may perhaps be elicited by the discussion of it.

DISCUSSION.

MR. HYDE CLARKE said it was desirable more information should be obtained, for it did not follow because the sculptures were beautiful that, therefore, they were Hellenic. Under the conditions of Etruscan, and of the objects discovered in Cyprus by Dr. Schliemann, they might be derived from that pre-Hellenic race from which the Greeks received their original culture, and whence they continued to sustain it. The schools of Asia held their ground against the school of Athens, and it was rather Asia that acted on Hellas than Hellas on Asia. Bœotia we know to have received its mythology from Asia, and we may, as a popular illustration, call it Canaanite, for there we found Athamas, Agave, Palæmon, and Echion. There appeared to be more female than male figures in the collection, and they were all in ordinary costume, and might possibly be portraits of wives devoting themselves thus symbolically to accompany to the other world their deceased husbands. As a matter of race, the Sumerian or Khita race, which preceded the Hellenic, was one of the handsome races of the world.

The PRESIDENT said in reply that he thought the style of art exhibited by the statuettes precluded the possibility of their being considered pre-Hellenic.

The following papers were then read by the Directors :—

THE PHYSICAL CONDITION and DISTINCTIVE CHARACTERISTICS of the LAPPLANDERS, and the RACES inhabiting the NORTH COAST of EUROPE. By ALEXANDER HUMBOLDT, v. H. v. d. Horck.

INQUIRIES have arisen as to the prehistoric population of Northern Europe. Philologists have attempted to prove that the languages of the Lapps, Finns, and the tribes of the Ural Mountains, are of common origin. At the same time, craniology shows marked differences, the Lapps being brachycephalic, the tribes of the Ural Mountains being decidedly dolichocephalic.

Whether the climatic influences, to which the Lapps have been subjected in their more northerly habitations, have not been conducive to changes, which may account for the present existing physical differences; whether or not, in fact, owing to the penuries, the extreme deprivations, the unfavourable mode of life for the normal development of the body, the Lapps have degenerated into an inferior, into a pathological, race, is a question of great interest, and is still a subject of grave dispute, and is worthy of patient scientific research, which may open new chapters in the history of man, of whom at present our knowledge is extremely limited.

Having in the preceding year taken charge of an expedition to the Polar Seas for the purpose of scientific exploration, I made preparations for entering into a special anthropological study of the inhabitants of the North Coast, and obtained numerous measurements, drawings, photographs, plaster-casts, as well as a valuable collection of bones, skulls, &c. The Laplanders—who, in their own language, call themselves *Sabme*, or *Saame*—may be divided into two classes: the “Nomadic or Mountain,” and the “Sea or Fish Lapps.” They differ but little in their outward appearance. Many of the latter were originally mountaineers, but, having lost their herds of reindeer, settled themselves along the shore, and maintain themselves by fishing, or gathering the eggs from the great breeding-places of the waterfowl in the vicinity of the sea-coast.

The Nomadic or Mountain Lapps are, as a class, stronger, healthier, and better developed, owing to the hardy, roving life they lead. They rarely intermarry with the Quains (Finns) or Norwegian settlers, thus preserving the purity of their blood, and their own peculiar characteristics. These tribes, although spread over Norwegian, Swedish, and Finnish Lapland, even extending into the Russian territory, exhibit respectively the same characteristics typical of the race. They are of diminutive stature, that is, much below the medium height of other European races. From a series of measurements, I found the average height to be about 1.5 metres.

The head is remarkably typical, the form of the skull round, exceedingly short from base to crown, but of great breadth, giving the whole head a compressed appearance as to height.

Average index of breadth of head above the ears, 88.4 mm.

Average index of height 73.8 mm.

These measurements are taken from living subjects, and therefore are somewhat larger than if taken from the skull.

The face is extremely broad, measuring between the zygomatic processes 109 to 116 mm. (according to my personal observations), but diminishes rapidly toward the chin, which is

rather sharp and pointed—in fact, the inferior maxillary bone is small and delicately shaped.

The eye-openings are usually small and irregularly shaped, slanting downward at the outer corners. This may be owing to the peculiar formation of the orbit, as observed in the skull. The orbit is rather capacious, but frequently the supra-orbital bone and the inferior margin project forward, so that the entrance of the orbit is thus narrowed, which is not usually observable in the skulls of other races. The border of the orbit has also a somewhat irregular shape, the lower outer edge being perceptibly enlarged, and for this reason the opening between the eyelids is necessarily slanting, but, unlike the Mongolian type, it extends downwards. This view is also taken by Professor Virchow, with whom I am now making measurements of the skulls recently obtained from the north. The nose has an almost uniform shape, and is eminently characteristic. It is short, flat, and very broad, especially around the nostrils. The oral orifice is generally very large, lips not very thick, and in old persons I have sometimes observed them very thin, and the mucous membrane showing exceedingly fine, thin folds. The teeth are excellent, and only in a few cases did I come across any decayed or missing, and these were molars. The ears are small, and remarkably well shaped. The hair of the head is smooth and straight; that of the men rather coarse, whilst that of the women is long and somewhat finer. The beard, eyebrows and lashes are of scanty growth, sometimes scarcely perceptible. As far as the colour of the hair, skin, and nails is concerned, it is difficult to establish any criterion.

The current opinion that all are blond that belong to the Indo-Germanic race, and all that belong to the Turanian race are dark, does not always agree with the facts; for we find, as I have shown in a series of anthropological tables and charts of the northern inhabitants, that many of the Lapps are blond, some having light golden hair and blue eyes, whilst among the Finns I found persons with perfectly black hair and eyes. The colour of the skin is subject to great individual differences. It is much lighter than one would suppose at first sight. The uncleanness of the Lapps is proverbial, and the skin is much darker and browner-looking, because it is impregnated with a mixture of grease, dust, sweat, &c., which are deposited in layers—for nobody can say how long—but producing an indescribably dirty colour. When wishing to determine the complexion, however, I always took the precaution to wash certain spots of the body with soap and water, rendering them as clean as circumstances would allow. I thus found the tint was much lighter. Usually it is a dirty, grayish white, or light olive

brown, although I have also seen children and young girls with beautiful clear white complexions and red cheeks; these were in general accompanied by blue eyes and golden hair. As far as the bodily strength of the Lapps is concerned, it is difficult to form any standard opinion, as the individual fluctuations which I observed in making measurements with Regnier's dynamometer were very great. Still I have found the men, as well as the women, strong, and possessing great endurance, especially on the march. As regards any specific body-smell, I can only say that I found none such, although when marching in the rear of the Lapps who carried the baggage, or when in the boats with them, the breeze would waft a disagreeable, sweaty smell. The same was the case when they pulled off their shoes and removed the fine hay which, after pounding into soft fibres between two stones, they used as covering for the feet. This they would hang up to dry before the camp-fire. The conditions under which the Lapps live are not favourable. Their food is often very poor and insufficient. It is mostly animal food—reindeer, wild beasts, birds, and fish. Besides, they gather berries, especially the "multebaer" (*Rubus chamaemorus*), which are found in great abundance in the extensive swamps. These they preserve for winter use, as it forms their only vegetable. They will often go to the whale-fisheries on the coast to gather pieces of fat, blubber, and meat, standing around and eagerly watching their chance to secure the morsels, even eating them raw. They are exceedingly fond of grease, fish-liver-oil, &c.

In taking my casts of the face I was compelled to rub the skin with olive oil, and always had great difficulty in restraining them from licking it away, at least so far as they could reach with the tongue. To prevent this I afterwards applied stinking train oil, but with no greater success. The only bread that the Lapps have is the hard, dried cakes which they obtain from Finland and Norway through trade. The habitations of these people differ very much. Those of the "Nomades" consist simply of tents, constructed of a few poles, over which skins of the reindeer are laid. These tents have one large opening at the side, serving as a doorway, and at the top a smaller one through which the smoke and stench can partially escape. The "sea Lapps," and those which are called colonists because of their having settled in the vicinity of the missionary houses—as in Karasjokk, Kautekeino—have permanent dwellings, small cabins made of logs, the crevices being plastered or filled in with moss, stones, and mud. In the summer, however, when they leave for the shores of the lakes and rivers to fish, they build small huts of birch or fir-tree bark, except when they

carry their skin tents with them. The clothing of the Lapps is uniformly the same throughout the north, excepting the headdress; the latter, among the Swedish Lapps, resembling a sugar-loaf, whilst those of Norway are very curiously shaped. The men wear a high cap, which has a broad band nearly 6 inches in width, whilst the top resembles a thick, heavy cushion, about a foot square. The women, on the other hand, wear a cap, into which a large carved piece of wood is inserted, giving the whole the appearance of an ancient helmet. In winter a large fur coat, or "peske," of reindeer skin, with a high collar, is worn, the leggings and the curiously-pointed shoes being of the same material, the hair turned outward. In summer they wear thick, coarse woollen stuffs, generally bright blue, green, or red, and the edges trimmed with coloured stripes of cloth of the most brilliant hues. As they have no pockets, it is exceedingly curious to see the manner in which they stow away everything inside of their coats. They fasten them around the waist by a broad belt, and make a forage-bag of the upper story, stuffing into it articles of clothing, shoes, eatables, the fine grass with which they cover their feet, whisky bottles, and other articles not to be mentioned, until the coat bulges out like a huge sack, causing the individual to appear extremely funny, with his short, crooked legs, looking as though he had been stuck through a barrel.

The belt, made of reindeer or bear or wolf-skin, is ornamented with beads or gaudy-coloured ribbons, brass rings, &c. From the left side of this belt is suspended a huge sheath-knife, with several small pouches for powder, tobacco, &c. Besides this, there are little pendant strips of leather all around, to which are attached the teeth of wild animals, such as the bear, glutton, and wolf, which are the hunting trophies of the animals captured in the chase. Again, a talisman of brass, or a curiously-shaped figure, forms a part of this ornament. The majority of the Lapps belong to the Lutheran Church of Scandinavia, missionary houses having been erected everywhere. Nevertheless, the wearing of mystical charms and relics plainly indicates that they still adhere to their heathen superstitions in many things. Many of them can read and write well in their own language, and I have in my possession some letters written in a clear, legible hand.

The wealth of the highland Lapps consists in their large herds of reindeer, which sometimes number many thousand heads, all owned by one man. They slaughter many of them yearly, and sell the skin, horns, and meat, which is mostly dried. So soon as the summer approaches they leave their winter homes amid the fir woods of the valleys, where their

herds throughout the severe cold have found sufficient moss to feed upon, and journey with their entire families, tents, dogs, and deer, toward the sea-coast, to the hills bordering on the Tromsø Valley and Altenfyord. Still, the greater number go to the high plateaus of the Spirte-njarg, Kjorgosh-njarg, Ragonjarg, and Varjag-njarg, the peninsulas lying between the Porsanger, Lase, Tana, and Varanger fyords. Here they are secure from the insects infesting the woods, which annoy both man and beast, and here too they find a more comfortable temperature, as these high northern headlands are swept by the cooling winds coming from the Arctic Ocean. Thus they wander about during the brief Polar summer, each family by itself, making it extremely difficult to hunt them up. I had an opportunity of seeing immense herds of reindeer, especially on one occasion when they were driven by a warm S.W. wind toward the coast. I saw as many as 8,000 to 9,000 gathered together, covering the hills as far as the eye could reach, whilst their huge horns, towering above their heads, resembled a forest of leafless branches.

The Lapps are very skilful with the gun, but more especially with the lasso, which they throw with wonderful accuracy. The Fish or Sea Lapps subsist mainly by fishing. Around their huts and tents one may see thousands of dried fish and fish heads strung together and hung upon poles. A few small boats lying on the water's edge, in which they sometimes venture far out at sea, besides a few nets and lines, sometimes a reindeer or two, comprise all their possessions. They present the same physical type as the mountaineers, so long as intermarriage has not taken place with other races. I was fortunate in securing a number of plaster-casts of living Lapps during my stay on the north coast, the only ones in existence, besides obtaining a large collection of skulls. The difficulties I had in securing these impressions were great, for I had to overcome their superstitious fears, which were aroused, especially when I attempted to take measurements with the craniometer. I had with me plaster of Paris in well-sealed cases, and proceeded in the usual manner to take impressions of the face, ears, teeth, hands, &c. The impressions of the lower jaw were, anthropologically, of the greatest importance. The peculiar formation of the maxilla inferior being eminently characteristic of the Lapp skull, differing as it does in this particular from that of almost any other race.

In procuring the skulls, which had to be taken from their old heathen burial-places, it was necessary to proceed with extreme caution, as the people consider them sacred, and guard the graves from all intrusion with superstitious care.

These ancient burial-places are usually near the hallowed groves or places where they were accustomed to assemble for worship, and they are still designated by the remains of stone pillars, or by the native name still attached to them, such as "Piattsam-dudder," holy mountain, or the "Patts jokke," holy river.

These tumuli are on the edges of the cliffs bordering the sea, on the sides of the mountains, or the steep shores of the lakes and river banks. The graves are of different forms. In some cases caves or crevices in the steep, almost inaccessible walls of the cliffs are selected, the body being deposited, and the opening closed with flat stones. Again, others are formed by cutting out the corners of two large boulders, and afterwards rolling them together, so as to form a sort of arched roof, underneath which a shallow excavation is made, and then the orifice is closed, as in the first instance, by piling rocks around it. Others again are deep, four-cornered holes dug in the ground, which are lined with stones. After depositing the body, the grave is covered with layers of stones, like tiles on a roof, until entirely shut in and protected from animals, as well as shielded from rain and snow. These latter graves have the appearance of huge stone heaps at first sight, but upon closer inspection one detects a certain regularity in the pile which indicates that they have been placed there by the hand of man. The bones are rarely found in a state of perfect preservation. The dead are often found wrapped in thick layers of birch bark, which have been sewed together with the sinews of animals. These coverings are often richly ornamented with curious drawings of the bear, wolf, reindeer, &c., as well as pictures representing the former life of the Lapps. Sometimes the body is packed in a "kierres," or kind of small sled, boat-shaped, which is still in use among the Lapps. Sometimes with the human skeleton we find the remains of animals, fish, and birds, leading one to the conclusion that it was customary to sacrifice these at the grave, as a part of the ceremony of burial—the mourners feasting, however, upon the slaughtered animals, wisely picking the bones clean before depositing them in the grave, as companions for the departed on his journey to the happy land. The bones have been found cracked open, evidently for the purpose of extracting the marrow, and it is worthy of remark that these have the same peculiar appearance, and are split in the same peculiar manner (diagonally from one end to the other) as those found in "Kjokken-moddinger" of the Danish coast, where the remains of mammalia are found among the sea-shells, which in the course of time have accumulated so as to form high walls or banks. We also find in the graves bows, arrows, spears, fishing

apparatus, harpoons, snow-shoes—the arrow-heads and points of lances being mostly bone or horn, those manufactured from flint being less frequently met with—besides these, pieces of quartz, splinters, large pieces of wood, and strips of birch and fir-tree bark.

Mr. Nordvi, who has opened many graves on the north coast, speaks of a kind of snail which is found in them, called "Hundsjael" (dog-soul), which is often buried instead of the dog itself, which is to the Lapps a valuable animal.

Let us now hastily glance at the "Skolter," or Russian Lapps. The term "skolter" is said to have its origin in the fact that formerly these Lapps were affected with diseases of the scalp, causing loss of the hair, whilst among them I detected nothing of the kind. It is my opinion that these people are in no way related to the Lapps which we have been describing, their physical and psychical characteristics are so entirely distinct, except in some isolated cases where intermarriage has taken place. There are in Russian Lapland some families of mountain Lapps which have evidently wandered over from the Scandinavian territory.

The "Skolter Lapp" bears a close resemblance to the common Russian serf or "Mujik," the features being more regular than in the races we have referred to, the forehead higher, the breadth of the face not so striking in comparison with its length; the shape of the eye not having the peculiarity we have mentioned, but more regular in its outline; the nose, instead of being flat, quite prominent, and the whole visage more strongly and heavily marked. The legs are better proportioned, as is also the entire body. The men have a long shaggy beard, whilst the women are comelier and more pleasing. Their dress is similar to that of the peasants living in the north of Russia. They are exceedingly filthy in their habits, and are usually covered with vermin. Their houses or huts surround or are adjacent to those of the missionaries; they are extremely low and narrow, being built of logs and plastered with mud, the crevices filled in with moss, &c. They are usually surrounded by several small storehouses, which are erected upon posts driven into the ground; thus lifted up several feet from the earth, most likely to keep the animals, such as the lemming, from destroying their stores.

So long as the accumulation of evidence as to the relationship of these races is so small, and the present existing differences are so strong, we must be content to look upon the Lapps and Finns as distinct races until further research may possibly prove the prehistoric Lapplander to have been a Finn.

The TRIBES of BRITISH GUIANA. By the Rev. W. HARPER.

THE Indian tribes of British Guiana belong to what has been called by several writers the Brazilio-Guariani nations, and are for the most part of the Caribian race. The Caribs, from whom the group receives its name, were in the sixteenth century one of the most widely spread tribes in South America, extending from the borders of Brazil to the Oronoco, and along the line of the lesser Antilles as far as Porto Rico. The natives of British Guiana are generally said to belong to five tribes, namely, the Arawacks, the Caribs, the Accawoi, the Macuri, and the Warraus. Representatives of several other tribes are, however, frequently met with on British soil. These people, being merely remnants of a few barbarous tribes found, for the most part, between the Amazon and the Oronoco, cannot now be said to be very numerous or important, but they are extremely interesting to those who have seen a little of them in their own settlements. Naturally desiring to know a little more about them, we feel inclined to ask such questions as, What is their origin? How came they to Guiana? What is their history there? Are they the original inhabitants of the country, or have they succeeded other races no longer extant? However interesting such questions may be, they cannot be answered in a very decided manner. The history of America previous to the discovery of Columbus is, at the best, very uncertain, and very little is known of the tribes of Guiana. There are, so far as I know, no Indian ruins in that country, and whatever the people may have been capable of in former times, they now seem to have no means of their own for recording events. Their only remnants of the past are a few earth-mounds, a rude sort of hieroglyphics carved on the face of the rocks called tumehni, and oral traditions. Some of the mounds have been opened, and are said to contain, among other things, human bones so fractured as to afford strong evidence of the cannibalism of the people who raised them, but beyond this they reveal nothing of any importance. The tumehni are found on rocks about the banks of the rivers, especially near the falls and rapids where canoes would have to stop in ascending into the interior of the country. These being not only the work of men, but of men in a higher state of civilisation than is now to be found among the natives of Guiana, had, no doubt, some significance at the time when they were executed, though the present tribes appear to know nothing about them. The carvings themselves, being generally rude delineations of men and animals, are very difficult to decipher, and the subject has unfortunately not received quite the attention which it seems to deserve. It has been

observed by travellers that they are very numerous, and extend over a large tract of territory. They have been ascribed to the Caribs, and it is not improbable that this race in its early days was acquainted with them, but lost its knowledge of them during the war and turmoil which succeeded the discovery of America by the Spaniards.

These tribes have also a large number of oral traditions, some of which have been collected by missionaries and travellers. These closely resemble other American traditions, and have no doubt often a nucleus of truth in them, though it is mixed up with much that is puerile, absurd, and incredible, so that the legends themselves are of little historical value.

Being thus in a great measure deprived of material assistance from anything to be found among the people themselves, we are left to gather what we can infer from the more certain parts of pre-Spanish American history and from such scraps of information as have been picked up since the discovery of Columbus.

The centres of American civilisation in pre-Spanish times were Mexico and Peru. Each of these had its own development, but the latter was much inferior to the former, though it is doubtful if this inferiority is due to the fact that it was the younger in point of time. There is, however, good ground for supposing that Mexico was the real centre of much that occurred on the eastern side of the continent previous to the time of Cortez, and that the inhabitants of the eastern plain of South America were much more influenced by what took place on the plateau of Anahuac than by what transpired on the table-lands of Penn. Even in those times the Andes and the Rocky Mountains were more effective as the boundaries of nations than the Gulf of Mexico and the Caribbean Sea. If we therefore had a clear account of what occurred in Mexico and its neighbourhood in early times, we would possess the key to much that is now almost unintelligible. The light, however, which early American records throw on the subject is dim and meagre. From the traditional explanation of the historical paintings of Mexico, we gather that several of the more powerful Mexican races came to Anahuac from the north or north-west. These migrations appear to have extended over a long period, and each fresh arrival would naturally cause considerable commotion—the stronger or fiercer tribes subduing or displacing the weaker or less warlike. Even as far south as Nicaragua the Spaniards found people who had come from Mexico, and these in their turn had displaced others, which probably passed on to less eligible positions. In the struggle the stronger tribes would occupy the more favoured places, and the weaker would frequently be compelled to go where there was room for them.

Each movement in the north caused a general commotion, which shook, displaced, or broke in fragments various tribes on the American continent. The offshoots and fragments of such tribes, not being able to maintain an independent position in more favoured localities, were sometimes driven into lowlands and swamps like Guiana. There are several ways in which they might come from the north to the eastern plain of South America, when they would be ultimately pressed into Guiana. They might come overland across the Isthmus of Darien, or by sea along the coast, working their way from point to point; or some of those well acquainted with navigation might put out to sea, and reach the West India Islands. Then passing from one island to another, until they came to Tobago and Trinidad, they might pass over from them to the South American Continent. In one or other of these ways probably all the tribes of South America came from the north, though it would now be quite impossible to prove this migration. In the lapse of ages the characteristics of some of the tribes would be lost, and many of them would acquire habits suited to the districts in which they settled. Some traces of such movements have, however, been discovered among the Arawack and Carib tribes, and these will probably serve to illustrate this subject.

When Columbus discovered the Bahamas and West Indies, he found on the former, and in some of the larger of the latter islands, a mild, quiet, hospitable people, who were very shy and retiring. These appeared to have belonged to the same race as the Arawacks of British Guiana, though inferior to them in courage and hardihood. These, according to a Carib tradition, came from Florida, and after peopling the whole of the West Indian Archipelago, passed into Guiana. The Arawacks of Guiana are now the only representatives of this race, the inhabitants of the larger West India Islands and the Bahamas having all become extinct under the Spaniards. The Arawack race was found by Columbus in Cuba, Jamaica, Hayti, and Porto Rico. In the smaller islands there appeared a race of men fierce, brave, and warlike. These were the Caribs already mentioned, which were thus the second race discovered in the New World. These were found in the smaller Antilles and on the continent. It is not easy to say from whence they came. Their own tradition asserts that they came originally from Guiana, and this view at first sight appears probable. The Caribs were at one time very powerful in that country, and some words in their language closely resemble the language of the other Guianese tribes.

Many, however, think that they came originally from the neighbourhood of Darien and derived their name from Cape

Tribes of British Guiana.

Caribema. It appears that the Abayma Indians on the Pearl Coast were in former times very much molested by them, but as the Caribs were a marauding people capable of making long journeys by sea, this is not much to the point.

A third opinion which is gaining ground in the present day, is that they came originally from the north of Florida. Having long waged war with a neighbouring tribe there, they were at length received by them as confederates and had a territory assigned to them; but, quarrelling with their neighbours about religious matters, in which they are still very obstinate, they left the country, and put out to sea. They soon came to the West India Islands, and, being stronger, braver, and more warlike than the Arawack race which occupied them, they were able to effect settlements for themselves. Passing by the larger islands, where they were probably awed by superior numbers, they fell upon the smaller Antilles, slew the males, and took possession of their land and women. Whatever place the Caribs may have come from, there can be little doubt about their having slain the males in the smaller West India Islands and taken possession of their females. This appears from the fact that the women in the Carib Islands spoke a language different from the men, and that the language of the females in the smaller islands closely resembled the Arawack language spoken in the larger islands, while that of the males bore little or no resemblance to it.

The language of the Caribs in the smaller Antilles differed slightly from the language spoken by the same race on the South American continent. This, however, was probably owing to the influence which other tribes exercised on their language. This may also account for the apparent analogy between the Carib language and that of some of the other tribes in British Guiana. It is, on the whole, somewhat improbable that a race like the Caribs could have issued from Guiana. Their courage, energy, and hardihood do not seem to be natural to these swamps. They are much more like what might be expected of the hardy sons of the north. Probably every portion of the human race has a tendency to degenerate on the wild coast of Guiana, and, though the Carib race improved for a time by mixing with other tribes, seemed to retain its native vigour, it has for some time been dwindling away. The sunny south is not its habitat.

Though it does not now admit of proof, it is very probable that all the Brazilio-Guarani tribes came from the north, though not at the same time. Of the tribes in British Guiana the Warraus and Macuri have probably been longer in the country than the Caribs, Accawoi, and Arawacks. The subject

is one of considerable difficulty, and the data from which we have to decide is very scanty. These tribes differ a good deal from one another in their language, characteristics, and habits, but not in their outward appearance or mode of living. The tribes have been frequently compared with one another, and are found to differ in language, in tattooing their faces, in the manner of building their huts, and in the animals which they consider unclean; but little can be inferred from these differences. Still, such things may sometimes help in an inquiry. In dealing with the subject, I would suggest that fac-similes of the tumehni, or rock-writing, be collected and compared with similar writing to be found in other parts of America, especially in the valley of the Mississippi. Though there is at present considerable doubt as to the origin of these writings, a comprehensive investigation of these things might throw some light on the subject. Such an inquiry would require special ability and culture, but tracings of these remains might be collected by people who could not investigate them, and in this way much time and labour would be spared.

These writings appear to be spread over a very large territory, and some curious facts are mentioned concerning them. The Rev. W. H. Brett, in his "Indian Tribes," states that they must extend over a long period of time. As some of them are very far up the rocks, the beds of the rivers must have become much deeper since they were executed, and therefore they must be of considerable antiquity. In one of them, however, he saw something like a Spanish galleon, and the people beside it expressing their joy at its arrival. He therefore thinks that it must have been executed after the arrival of the Spaniards.

Whatever may have been the origin of these writings, if they mean anything they resemble the writings of Mexico and North America more than the remains of Peru. Indeed, the Quippus, or cord-writing of Peru, was something very different.

In bringing this question before your Association, my main object is to call the attention of persons interested in such matters to the subject.

A discussion on the above papers then ensued, in which the PRESIDENT and others took part.

The following paper was taken as read:—

On some CRANIA of the ROUND BARROWS of a SECTION of the YORKSHIRE WOLDS. By J. R. MORTIMER, Esq.

In this paper I beg to give some particulars of the finding of two extreme forms of skulls in round barrows, situated on a section of the Yorkshire Wolds, reaching from near Driffield on

the east to Aldro' on the west, and embracing an area of about 80 square miles, the barrows in which are not yet all examined, although they have been under examination for the last ten years. This section takes in a little of the low land, and includes the most elevated portion of the chalk wolds, where, at Wharram-Percy, Aldro', and Garrowby-hill top, it rises to an altitude of 700 to 820 feet above the sea. Here, as in the south and other parts of England, the long barrows are sparingly associated with the round barrows. Only one long barrow now exists, to my knowledge, in this section. It is similar to the few long barrows which are found in other parts of Yorkshire, and the unchambered long barrows in the south of England. Its length is about twice its breadth, with the long axis running east and west. Along each side of the whole length of this tumulus was a filled-in trench of considerable dimensions, which, as in all other true long barrows, does not pass round the ends. After a very careful opening, this mound yielded no interment; but in three places there was a crushed urn of a peculiar type, which might have accompanied interments that had finally disappeared.

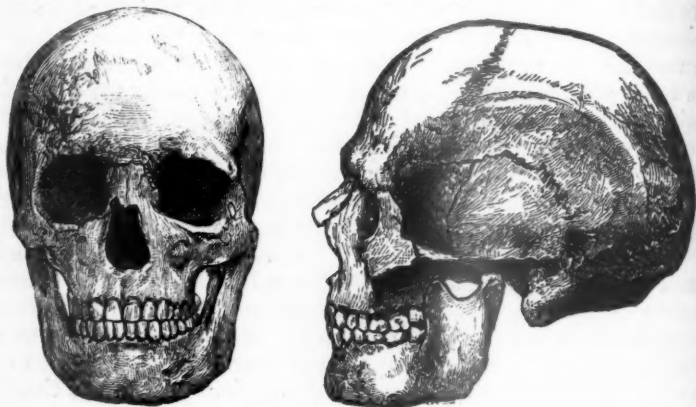
The round barrows of *this* area are of two varieties: the one having been encircled, or nearly encircled, with a ditch and bank passing round its circumference, but which, in most cases, is now obliterated, whilst the other has no such enclosure.

I do not intend to enter into the relative age of the two ancient forms of sepulchres—the long barrows and the round barrows—my chief object being to give, as far as I am at present able, an account of the finding of a few of the crania of the men who contemporaneously occupied and possessed this portion of the Yorkshire Wolds during a long period in prehistoric times, and leave you to form conclusions of your own.

I take my examples from tumuli reaching from east to west of this section, and commence with two occupying the low land in Garton-Slack. The first tumulus is about one mile east of Craike Hill, and two and a half miles west from Driffild. It covered two oval graves in the centre. The fragmentary cranium (No. 1) found in this tumulus is dolichocephalic, and has a cephalic index of .72; it belonged to a much flexed interment resting on the floor of the grave marked "A" on the plan, on its back, with head to the south. A food vase accompanied it, and round its head were several minute flakes of dark flint. Over its feet, at about half the depth of the grave, was a small heap of burnt human bones. A femur measured 19½ inches, and is of great substance. The second skull is very different in form, and has a cephalic index of .85, is therefore strongly brachycephalic. The interment to which this cranium belonged occupied the bottom of the grave, "B," lying on its

right side, with the head to the west, both hands under the chin, and the knees pulled up. The two femora measured 17 inches each, and are of rather slender make. A crushed food vase lay near its head. Just above this interment lay the flexed remains of a child about three years old, and upon its feet was a heap of broken human bones.

Going westward to within a mile of Wetwang we come to another tumulus. The skull (No. 1) from this barrow has a cephalic index of .72. This interment lay on the floor of an elliptical grave, partly on its left side, with the head to the south-east and legs much doubled up. It was accompanied by a badly formed flint knife lying on the lumbar vertebræ, and a very fine drinking cup, of large size, stood close to its right shoulder. Its femur is 19 inches in length.



"C. 63." No. 1.

Skull No. 2 has a cephalic index of .94; consequently is brachycephalous to an extreme degree. It is from the same mound, and occupied the floor of the southern half of a quadrangular grave, contiguous to the northern side, from whence the long skull was taken. Except that it lay on its chest, it was in the same posture as the No. 1; the femur measured $17\frac{1}{2}$ inches, and is of great substance. Close to the knees was a drinking cup, accompanied by three large flakes of black flint, a beautiful polished flint axe, and a bone pin $2\frac{3}{8}$ inches long; also a flint knife was stuck point downwards, just about the right side of the pelvis, as if it had been worn in a garment passing the loins.

On the floor of the northern side of this grave lay the greatly decayed remains of a small person, most likely a female. Its attitude differed from that of the two previous ones by being on

its right side, and having its head to the west. This body was also accompanied with worked flints, and a drinking cup lay close to the back portion of its greatly-decayed skull. Above this duplex interment, and mixed with the material filling the grave, were many broken human bones, belonging to several individuals, and having other appearances indicative of cruel rites. These interments occupied the centre of the mound, and were undoubtedly contemporaneous. Passing from these ancient dwellers in the valley to those on the hills, we find an equally great dissimilarity in their cranial forms. The skull marked T 98, G B, belonged to a primary interment beneath a tumulus on the "Wayrham Farm," about one mile west of "Pluckham." It has a cephalic index of .71. This interment lay on the bottom of an oval grave, on its right side, in the usual crouched position. In front of its chest stood a food vase, close to which was the



"C. 63." No. 2.

root end of a large antler of the red deer. A femur measures 18 inches, and is of great strength. Further interments, both by inhumation and cremation, and several urns were found in other parts of this barrow.

Another skull (No. 2, T 100) was obtained from a barrow situated about two miles S.W. of the last. It was procured from an interment lying with its head to the N.E. on the bottom of a large grave, and at full length, a position occupied by less than one per cent. of British burials. It has a cephalic index of .90, and the femur measured 19 inches. In the same grave a doubled-up interment lay above it, the cranium of which, as far as could then be made out from its crushed state, was of the long type. The two next examples are also from one tumulus, No. 104, standing close to the York Road side, on the very summit of

Garrowby Hill. The fine-featured cranium (No. 1) belonged to a skeleton which was lying about 16 inches down in the centre of a large grave, with its head to the south, and knees pulled up. It has a cephalic index of .75. The femur is 18 inches long. Near the head lay a flint-flake knife. No. 2 was 23 inches vertically beneath No. 1, and in the same posture. Its breadth index is .83. A femur measures 16 inches, and is of great substance. Close behind the head stood a food vase, and near the two bodies were a few animal and many dismembered and fractured human bones; whilst fully 2 feet below them, and on the floor of the grave, stood two beautiful earthen vessels, with what seemed to be some ribs of a cow lying near them. These urns and fractured bones indicate food deposited with the dead.

Passing, on the ridge of the wolds, five miles in a northern direction, we reach Aldro'—a place of great importance in British times—a locality thickly studded with tumuli, occupying the most prominent points and commanding extensive views stretching away right and left into the Vales of York and Pickering, and far in front to the more distant Moorland Hills. The tumulus from which the very extraordinary specimen (No. 3) was taken stands on the very summit of the north-western escarpment of the chalk wolds, half-a-mile north-east of Aldro' House, and is one of the most interesting mounds explored by us. It is to be regretted that half of this remarkable cranium has gone to decay, but fortunately enough remains to show the shape and that it possessed a very exceptionally low and contracted frontal region. Its small size, the low receding forehead, and the very prominent superciliary ridges are unequalled by any British skull known to the writer, and the cubic area of its brain cavity must have been relatively very small. Its cephalic index would be about .70. The body to which this skull belonged lay 2 feet down in the centre of a vast grave, crumpled up, with the head to the west. The root-end of the antler of a stag and a few other bones lay near its head. This grave was funnel-shaped, 15 feet in diameter at the top and 14 feet deep. It contained two food vases and the remains of no less than fifteen individuals of all ages. My tenth and last example is from a portion of a barrow standing on the brink of Birdsall Brow, about one and a-half mile to the north-east of the one last mentioned, the other portion having been carried away by a landslip at some remote period. Fortunately the central grave remained, and the body lay undisturbed, with its knees pulled up towards the chin and head to W.S.W. This very fine skull has a cephalic index of .79. Close to this body lay a smaller one, minus legs and pelvis, and with the skull cleft.

By preparing a tabular analysis of this small series of skulls from our circular tumuli, and comparing it with Dr. Thurnam's "Analysis of Skulls," obtained from the barrows of the south of England, we observe marked points of difference.

The ten skulls on my table are from seven circular tumuli, and are divided into two very opposite types. Five are brachycephalic to a great degree, having a mean cephalic index as high as .86; whilst the other half are dolichocephalic, with a mean index as low as .72. In the south of England Dr. Thurnam finds the round-barrow skulls to range from .74 to .89, and to afford a mean cephalic index of .81; and from the same neighbourhood he finds the unchambered long-barrow skulls to range from .63 to .75, and to give a mean index of .69. He also finds the crania from the chambered long barrows to range from .67 to .77, and to have a mean cephalic index of .71; and he adds that at the present day there is no people in Europe with skulls so long and so narrow. It is worthy of remark that Dr. Thurnam finds, in the main, his long barrows to contain long skulls, and his round barrows to contain round skulls; whilst in Yorkshire we find the circular tumuli to produce promiscuously these two extreme forms of crania; and though the long barrow in our section produced no human remains, the few explored long barrows of the adjoining neighbourhood have yielded, like the circular tumuli, both forms of crania, with many traces of burning and numerous semi-calced human bones. Moreover, Dr. Thurnam gives the mean stature, derived from fifty-two measurements, as 5 feet 6 inches for the men with long skulls—or from the long barrows—and 5 feet 9 inches for those with round skulls, or from the round barrows.

My computation of the stature of these two types of men—the brachycephalic and the dolichocephalic—is the very reverse of his. My analysis shows the mean stature of the five examples possessing long skulls to be as much as 5 feet 9½ inches, and the average stature of those five having round skulls to be 5 feet 5 inches only. The examples I have produced are believed to be, with probably one exception, males. The female element might have produced different results, and has been intentionally avoided.

From the knowledge obtained in procuring this interesting decade of skulls we have no proof of a period of high mental culture, but much evidence of *gross superstition and savagery*. Yet from the table of measurements it is obvious that our remote ancestors of this neighbourhood reached high on the standard of physical growth, and that the cubic areas of their cranial cavities, with one exception, show them to occupy a

high position in the scale of cerebral development. And, lastly, we here find no evidence of a period when men possessing either form of cranium were the sole denizens of the small area embraced by this paper, but that men then lived together amicably, possessing skulls varying in type as much as do the heads of the men of the same area now differ in form, we have ample proof.

MEASUREMENTS OF ANCIENT BRITISH SKULLS FROM BARROWS IN
THE E. R. OF YORKSHIRE.

TEN SKULLS BELIEVED TO BE OF MEN.	Burial.	Grave.	Relics.	LONG SKULLS.			ROUND SKULLS.		
				C Index.	Lngh. of Femur	Calc. Stature	C Index.	Lngh. of Femur	Calc. stature
Derivation of Skulls.					Inchs.	Ins.		Ins.	Ins.
Garton Slack "C. 40."	1	A	Flint Flakes	72	19.5	72.3			
Garton Slack "C. 40."	2	B	Food Vase				.85	17	63
Garton Slack "C. 63."	1	B	Flint Knife	72	19	70.3			
Garton Slack "C. 63."	2	C	Drinking Cup				.94	17.5	64.7
			Flints						
			Drinking Cup						
Waytham "98."		B	Bone Pin						
			Stag's Antler	71	18	66.5			
			Vase						
Calais Wold "100."	2		Bone Tool				.90	19	70.3
Garrowby Street "104"	1	A	Flint Knife	75	18	66.6			
Garrowby Street "104."	2	A	Vase				.80	16	59.3
Aldro'.	3		Antler and	70	19.2	71.3			
			Bones						
Birdsall Brow "65."	1	A	Flint				.79	18.2	67.7
				72	18.7	69.5	.85	17.6	65

ANTHROPOLOGICAL MISCELLANEA.

The following EXTRACTS from the late Commodore GOODENOUGH'S JOURNAL* are of interest as describing the natives of Mallicollo and Vanikoro; skulls from which islands are described in Prof. Busk's paper, at page 200:—

1875—*July 29th.*—Stood in and steamed into South-west Bay (Mallicollo) at 11 a.m., finding a pretty regular bottom, and anchored in ten fathoms black sand. I went to a good village on the point, and found the people very friendly—many smeared with lime, and all dirty, but good-natured. They were glad to see us at their houses. One had a small bone of a man's leg hanging to his right ear as an ornament. I at once got some words, the people helping me, and seeming very intelligent about it. To my satisfaction I found two houses, which were seemingly public-houses, or dead-houses, certainly the former. At one a man laid down and mimicked going to sleep. Just inside a low door came the chief post of the house, and round this were figures of straw covered with clay in which the figure was moulded, showing the navel and nipples. At knees and elbows a face was moulded, the skull was there entire, with a moulded clay face. They were quite ready to part with these heads for a knife, and to allow any number of common skulls to be taken. I made a prize of some for Col. Fox, and got him one or two very good stone and shell adzes. All about were little figures, hammers for killing pigs, and other odds and ends of mummery. I saw two villages; all alike. I suppose each village contains eighty people or so; but we only saw men—no women or children, whom they repeatedly said were "sisi," which I take to mean no, or not there, or something equivalent. I saw a titi (woman's girdle) hanging in a house, and a fine mat in process of making, just as in Ambrym and Port Sandwich. The dress of the men is also the same. The dancing-ground (as at Port Sandwich) has lallies and figures round it; the lallies very large, and with different faces from those at Port Sandwich—flatter.

August 10th.—Saw Vanikoro (Santa Cruz group) at daylight. . . . I took Perry in the galley in p.m., and round Direction Island, finding a landing, as I expected. The people all escaped to the main across the joining reef, poor creatures, laden with house-

* "Memoir and Journal of the late Commodore Goodenough." Henry S. King & Co. London, 1876.

hold goods apparently. I landed after calling "O mai" repeatedly, and looked into several of the six or eight houses. One, which was oblong, and had side walls 4 feet high, was evidently a public-house. The others were perhaps not quite so high, and had a semicircular end, indifferently pointed, but generally inshore, the door being beachwards. This end was generally cut off by a wooden sill, 4 or 6 inches high. In the centre of the apse were eight to twelve black stones, some little columns of basalt, some flat pieces, and some large round pebbles. Some big whorls lay as ornaments. On the left as one faced this little assemblage was always a little cane bench. I couldn't think what this meant, till in one hut I found a child's skull upon the stool, well smeared with yellow earth. Besides a few old bags and mats, a bow, and the hafts of adzes, there was absolutely nothing in the village. Everything had been removed. At quite one end, and at the last of all the houses, was a roof without walls, but with side posts, and under it a quantity of skulls around some upright stones, but no bones of any sort, and no lower jaws. I conclude from all this that this is again a worship of ancestors, household and tribal, and that each house has its own Penates. There are no marks of any sort upon the stones. A net, by the way, and a few girdles, like those of the Mallicollans, were left in the huts.

August 11th.— I took a cutter and whaler away at nine, and ran inside the reef to a village called Mumbola in the chart, and by the people now, and then on to Payon and Neuna, and so out to the ship by 5.30 p.m. As we got near Mumbola we saw a canoe, and she beckoned us onward, so both boats went in. A man came out to the cutter, so I got hold of him and gave him a sulu, and got him into the boat. He slapped his breast, opened his mouth, which was full of betel nut (quite crammed) and called himself Alik, chief. The present of a sulu was opportune. He was delighted, and waved it to his fellows on shore, who were quite ready now to come and talk. His teeth were black with chewing betel, and he kept on taking more, tearing the nut, snatching the leaves and lime, and devouring in haste like a beast of prey. These fellows had bows of six feet, and arrows of four, well ornamented. My friend, who slapped himself, and called me Alik, again took me by the hand, and led me to the public-house, 30 feet by 20, with side walls and posts carved with fish, of which I brought away a couple. We then began to bargain. I got a paddle and some very pretty, neat mats. Perry got some words, and I a few, but it was not easy, as about twenty-five fellows were round us, and all talked together, bargaining, &c. An unhappy fellow, covered with scales of a sort of ringworm, was the most intelligent. Some of these people were much lighter than others, and there came down one light-coloured man, with cropped hair, famously got up with earrings, bracelets of beads, armlets, leglets. A most picturesque figure, but as wild as a hawk. He hovered outside the circle first, then came near. I held out my hand; he thought I wanted his girdle, and it was long before I

could make him understand that shaking hands meant a friendly act. I offered him a small hatchet for his earrings, which he gave me: a bunch of tortoiseshell rings and a ring of shell in each. The dress is a bark girdle with four or five turns of a black rattan on it. A piece of tapa, thick and beaten out of the vau, makes the maro. It was altogether a friendly visit, and both sides were pleased. They were ready to part with what they had, and were not suspicious in handing it over. We saw no sign of a woman, save the fine mats, which I suppose they had made. Some ship's canvas was in one hut, unused, and therefore spare; and a sheet of copper—thick, heavy, red copper—was used as a door-sill to a hut. I am sorry I did not bring it away. It was too thick for sheathing, and had, moreover, never been used. Another sheet, but sheathing, and yellow metal, and torn from a vessel's side, was used in like manner at another house.

I only went into one house or two, and in these were a stone or two as rudimentary Penates—round stones; and in one a skull was laid carefully on a board over it. We parted "with mutual expressions of goodwill," as they would say, but which one can't say here, as the form, where there is any form at all, is at most, "You stay! I go!"* I imagine they said something of this sort. We went on, eating our dinner, and ran down to Payon, near where the "Sandfly" was insulted by a skull being laid on a piece of tapa on a point. There is but one house, and that a poor one. There was a skull—perhaps the very one—on a board over the place where the household god is kept,—the black stone. The people of this village, probably 16 or 20, including women and children, had all vanished (as they did to-day) up the stream in a canoe. After looking about, and leaving a sulu on a stick, we went on, seeing no hut, or canoe, or sign of inhabitants, till past the extreme west point, where were two houses, and a hut for dead men's skulls, abandoned, as I suppose, six or eight months ago. And this is all. The whole of Vanikoro, at a greater rate than this, cannot have more than six hundred people on it of any sort. Where are they? I imagine excess in betel nut, and excess in other ways, and child murder, and disease to have killed them all.

OFF SANTA CRUZ, Thursday, Aug. 12th, 1875.

I am going on shore to the spot where the "Sandfly" was last year, to see if I can't make friends with the unfortunates, who seem most friendly and anxious to be civil, by coming out to us in canoes, and looking as if they wished to please.

Tuesday, 17th.—But I was disappointed. I take it they are an untractable people, without much respect for authority or for each other. I wrote the above on Thursday, thinking that in the very remote possibility of anything occurring you should have my last word. I went on shore with two boats, but as I got near the shore I saw a number of canoes hastening to the place at which I was going to land, so made signal for a third to follow. As we drew

* The only Fijian form for "good bye."

in to the shore, canoes came about us, eager, vociferous, and friendly, and with a rather villainous look. They are big compared to some other islanders about here, are not at all dark, some being very light, and with very light hair; but betel-nut chewing is universal. All mouths are full of a chocolate and black masticated mass, and teeth are as black as jet, with great lumps of the lime with which they chew the betel adhering as "tartar" to their teeth.

The following EXTRACT is from a REPORT on the ISLAND of TRISTAN D'ACUNHA, presented to Parliament in 1876:

The Tristan d'Acunha group was originally discovered by the Portuguese (and named after the commander of the expedition) in 1506. It was further explored and described by the Dutch in 1643, and the French in 1767. From 1790 to 1811 the large island appears to have been occupied by American sealers. They appeared to have subsequently abandoned it; for formal possession was taken in the name of the British Government by a small military force from the Cape of Good Hope, as an official notice of 30th March, 1817, announced the occupation. The object in occupying the island by a small detachment of artillery was the confinement of Napoleon Bonaparte at the time in St. Helena. At his death, in 1821, the detachment was withdrawn; but one of the party, Corporal Glass, and two seamen of the St. Helena naval squadron (which latter occasionally visited the island) obtained leave to remain. Glass became the recognised chief. He raised a large family; so also the two man-of-war's men. This and the immigration of a few whaling men, who married the daughters of the above, have brought about the present population. The group has been occasionally visited since 1821; the most notable of these visits was that made by the Duke of Edinburgh, in her Majesty's ship "Galatea," in August, 1867.

Commander N. Digby, R.N., on Jan. 8th, 1875, reported as follows:—

There are fourteen families on the island, eighty-five persons in all. They subsist on the produce of their farms, on which they rear cattle, sheep, pigs, and poultry, in considerable numbers, and cultivate potatoes and other vegetables. The sea abounds with fish, and the neighbouring islands are visited for seals. There is no lack of the necessaries of life, but as there is no regular communication with the rest of the world, they are dependent on the casual visits of vessels for clothing and luxuries. Want of flour is their most serious inconvenience, and wheat will not grow. The number of vessels calling there has considerably diminished since the American war, before which the island was frequently visited by American whalers, which are now but seldom seen. Peter Green, a native of Rotterdam, who was wrecked on the island about forty years ago, is the person who appears to have the greatest influence among the people, who are nominally on a footing of equality, and

I believe it is due to his superior intelligence, aided by the advantage he possesses in point of age, that order is maintained. Green considers himself under the jurisdiction of Cape Town, and bases his assumption on the fact that, some years ago, Bishop Gray, of Cape Town, visited them, and made them sign a document acknowledging themselves in his diocese. Fresh provisions can always be obtained, of good quality, and in any quantity, and the boats are rarely prevented by stress of weather from communicating.

On October 15th, 1875, Captain G. S. Bosanquet, R.N., made the following report on his visit to the island on the 12th and 13th October :—

The report made by Commander Digby, of Her Majesty's ship "Sappho," in January, represented accurately the state of this minute colony, and I have little of any value to add to it. I enclose a census of the population which I caused to be taken, from which it will be seen that there are only fifteen males of the age of twenty-one years and upwards. These represent the physical force, and I think I may also say the intellectual, of this somewhat unsophisticated community, although I should not venture to assert this (superiority of the males) of any more highly civilised one.

The families are connected by the ties of marriage, and their interests are identical. They have certain rules of their own, and the present senior male member of the community, Peter Green, is made their referee if necessary. This position has been conceded to him, not alone from his superiority in years, but also from having greater force of character, being a European, than the rest of the community, who are half-castes, and of more plastic materials.

There are two exceptions, one an Englishman, who came here some years ago from the Cape, and married, who is now desirous of leaving with his family, and going to New Zealand, or first to the Cape of Good Hope, and the other an American, who settled here of his own choice in 1845. The first of these, Joseph Beetham, I was willing to have removed to the Cape, as he evidently was dissatisfied, and is probably a disturbing element in the settlement; unfortunately, the principal female member of the family was not in a condition to make a hasty move.

It will be well, perhaps, to give a general account of the condition of the island, although, probably, Her Majesty's Government is well informed of all the facts of the case. The island, imposing, but gloomy and forbidding when seen from a distance, is volcanic, rising precipitously in almost all quarters from the sea in a continuous and magnificent chain of heights of from about 2,500 to 3,000 feet, furrowed by water-courses and ravines, and clothed with scrub and a specimen of dwarf pine; within this first barrier rises the great peak, said to be 7,640 feet high. On the north-west extreme there is a considerable tract of fertile undulating land, principally pasture, which slopes gradually to the low cliffs on the margin of the sea. The settlement is on the northern extreme of

this tract, which is not the most eligible in point of shelter, but is convenient on account of the anchorage near by.

In the immediate vicinity of the settlement are several hundreds of acres of pasture land, on which feed numerous draught cattle, as well as sheep and pigs. The soil is rich here, but on account of the extraordinary violence of the winds at certain times it is almost impossible to grow anything, and many cattle at times have been killed by the actual force of the wind. Two years ago more than 100 milch cows were so lost during a violent north-easter. This part was also at one time covered with trees, as far as I can ascertain, of the same species as still exists on the heights, a sort of dwarf pine, low and twisted in their stems; these were entirely destroyed some years ago by a species of louse or beetle which seized upon the trunks.

About two miles south-west of the settlement there is a sloping grass plain of several thousand acres in extent, which is used in common as the grazing ground for all the cattle of the community, although the cattle themselves are the property of different owners. Small portions of this tract are fenced off for the cultivation of vegetables, and sheltered spots, formed by depressions in the ground, are planted with fruit-trees. Any quantity of the land could be brought under cultivation, but there is no means of disposing of the produce, as they did formerly, when numerous whalers frequented the sea around the island. The cattle amount now to about 400 head, since the severe loss mentioned above. There are many more sheep, and numerous pigs. The inhabitants live on their stock and other produce of the farms. Unfortunately for them, they have given up the cultivation of corn, which at one time grew abundantly, the reason being that the crops were destroyed by mice, which now infest the island, and no efficient steps have been taken to overcome this plague. In consequence of this the community are dependent for flour on ships calling. There is an abundance of good fish, such as rock cod, sea perch, cavalli, and great numbers were caught from the ship during our stay. At one time the island was frequented by seals and goats, but the former always migrate from the places where man settles, and the latter suddenly disappeared. Some time ago a number of goats were brought over from Inaccessible Island, where they are numerous, but these also disappeared as the others, and no trace of them has been discovered.

Within a few hundred yards of the shore a floating belt of kelp sea-weed, of considerable breadth, moored to the bottom, encircles the island. This is used for manure. Sometimes it is cut from boats, and sometimes great quantities are thrown upon the shore by the storms. Expeditions from the island are made at times to Inaccessible Island, for the purpose of procuring seals and sea elephants—the latter for the sake of the oil—also for goats and wild pigs.

Commander Digby states that the emigration of some of the community will be necessary as the population increases. I cannot see the necessity for this, although, for the comfort of the community,

it may be best. I inspected the land, and made close inquiries, and there is land enough and stock enough for a very much larger number of people. I have little doubt that the peculiar enjoyment and content of the original few settlers has now to a great extent diminished. It depended on ample space, and abundance, and undisturbed possession; also this and the neighbouring islands and sea abounded with seals, sea elephants, and wild goats, which were easily taken, and in very large numbers; and there was an extensive traffic for the few with the whale ships which then constantly communicated. With the increase of the inhabitants, however, their unbounded freedom was curtailed, as there were more people who had claims to be respected; there were more mouths to feed, and more hands to take part in the seal-hunting, &c., and to share in the traffic ensuing therefrom. The wild animals just mentioned became more scarce, the supply of seal-skin and sea elephant oil falling off, ships ceased almost entirely to visit the island.

The present community are naturally averse from any influx of settlers, as it would increase the drawback mentioned, and steadily reduce what seems to me to be the only attraction to the place, viz., space, and plenty on sea and land, all at their own disposal, with few to participate, and those mostly united by family ties. There is also another and an increasing difficulty—that of obtaining certain necessities, such as clothing, blankets, flour, and groceries. These used to be obtained by barter from the whale ships, which also purchased the skins, oil, &c., and obtained supplies of beef and vegetables; but as the whale ships scarcely ever now visit the island, the people are in a worse position than formerly, and poorer, as they have no incentive to raise a larger quantity of food, there being no longer a demand for it. Their possession of a small vessel to carry the produce and cattle to the Cape could be of no use, as there is no safe anchorage. Firewood is procured from the scrub and small trees which grow on the heights.

The Governor of the Cape of Good Hope makes mention in his letter to the Colonial Office of the alleged inhospitable treatment by the islanders of people resorting there for fishing and other purposes. I do not think the community deserve this. They are, doubtless, anxious on the score of others coming there, simply on account of the difficulty of keeping themselves even indifferently supplied with certain necessities, such as clothing and flour, and luxuries, such as tea, sugar, and tobacco; but many ships have been wrecked or abandoned off this island, and the crews have been well cared for by the community, who have received little or no return for it; and I may here remark that, from the statements of one or two of these people as to some of the ships burnt, wrecked, or abandoned near this island, although it does not appear to have occurred to them that a suspicion was unavoidable that this neighbourhood was taken advantage of for the iniquitous purpose of destroying ships when the crew could be saved, where no judicial investigation could take place, and from which evidence could not be easily procured.

Peter Green informed me that there is land as extensive and equally good on the south side of the island, and much the same sort of anchorage, but the wind commonly prevailing, which is westerly, blows on to the shore. It is possible to get round to it on foot, but it is difficult, and cattle could not be transferred there by land without a track being made. Education is doubtless at a low ebb. Some few children are taught by Peter Green and his wife, and some others by Mrs. Frances Cotton. Most of the people can read, but many cannot write. There is a fair supply of Bibles, and some school-books, but an additional supply of both is needed, as well as of slates, &c.

The community could not find a salary for a schoolmaster, but they would be ready to supply him with food. A clergyman or Scripture reader (the Rev. William F. Taylor) resided in the island when it was under the see of Cape Town, from 1850 to 1856. When he left, he induced more than half the inhabitants (forty-five in number) to leave with him for the Cape. I understand that he was paid by some society or individual in England, but the community supplied him with food.

Several of the present islanders have been away at times whaling, or on visits to the Cape Colony or St. Helena; one or two of the women also have been in service at the former place, but, finding the wages not sufficiently remunerative, returned to the island. As I have previously stated, there is no means of establishing a communication by private vessels, as they have almost entirely ceased to touch there; even when these visits were frequent, they were made almost entirely by outward-bound ships, whether whalers or others; the former were generally *en route* for New Zealand, but none touched at the Cape. The only dependable communication must be by men-of-war, as mentioned by me in the suggestions for the future rules and laws.

The chaplain of this ship, the Rev. John Pitman, baptised twenty-five children, one of which was born the night after our arrival. The remaining unmarried daughter of Peter Green, and the only young lady of sufficient age at this time, was married to one of the community by him also. I had the pleasure of witnessing the ceremony with several other officers of this ship, and afterwards we were entertained at a repast by our host, the bride's father, in a most sumptuous manner. All the community took part at the feast, and we were all astonished, not only at the lavish abundance, but at the excellence of the *cuisine*.

The arrival of a ship is the signal for a holiday, as in this instance, and I was much struck by the cleanliness and neat appearance of all; but the most pleasing feature was the quiet and unaffectedly good manners of the community, perhaps more particularly amongst the women and younger ones.

I assembled the elders of the community to confer with, and informed them of the object of my visit and the views of Her Majesty's Government. They did not apparently see the necessity for any rules of government, but they desired that there should be

some constituted authority in order to prevent the occurrence of such an infliction as occurred during the late American war, when the "Shenandoah" landed some forty prisoners without providing for them, and when the captain of the ship was remonstrated with, and told that the island was under the jurisdiction of Cape Town, he desired them to show him some document to prove it. The unanimous desire and first requirement of the people is for a resident minister, and if such cannot be had, for a schoolmaster or Scripture reader. They could not provide him with an adequate salary, as they are too poor, more so than formerly, but they would furnish him with food, as they did to the Rev. W. Taylor. If such a minister could be provided, having also sufficient intelligence and energy as to direct the inhabitants in the improvement of their land, by planting, raising stone walls to shelter the crops, and re-introduce the cultivation of corn, protecting their crops by a judicious system of deep overhanging trenches, or any other means, to guard them from the ravages of mice, it would be a very great benefit to them.

NEW ZEALAND HEAVEN AND EARTH MYTH.

The following version of the New Zealand myth of the creation has been communicated by Mr. J. F. H. WOHLERS:—

The name of the oldest god was Tangaroa. He was the uncle of Heaven (Rangi) and the first husband of the Earth, whose personal name as a woman was Papatuanuku. Once, when Tangaroa was absent, Heaven took his wife, the Earth. When Tangaroa came back Heaven had to meet him in a duel for the offence, and was by him wounded and lamed for ever. Tangaroa, having had satisfaction, left the Earth, and she was thenceforth Heaven's wife. The latter being lamed, could not stand upright. Heaven was then laying flat on the earth, and it was close and dark on the same; no wind could blow, no light could shine. Still Heaven and Earth brought forth many children; most of them were cripples, but a few had sound limbs. Among the latter was Tane, the most conspicuous. The children found the close darkness inconvenient, and had a consultation what to do to gain light and liberty. Some proposed to kill their father, Heaven, and to be content with one parent, their mother, Earth. Others advised to lift Heaven up high above, and there let him remain a stranger to them. This was agreed to. After much exertion, Heaven was lifted and carried up by his children, and fastened by Tane. When Tane came down again he looked up to his father, but the old man looked dark and sad. So Tane went and fetched ornaments, with which he gave Heaven a bright polish. Then, when he came down again, and looked up, he thought his father was not yet ornamented as he ought to be, so he got more ornaments, of which he drew the milky way and set the constellations. Then he came down and looked at what he had made, and it was good. Now Tane looked at his mother, the

Earth, who was still void of ornaments. So he raised some of her crippled children, the trees. First he put their legs (branches) to the ground and their heads (stumps and roots) up. Then he went aside and looked at them; but the trees did not please him in that position. So he took them up again, and put the heads to the ground, and the legs (branches) up. Then he went aside and looked at what he had made, and it was good. Though Heaven and Earth have been parted, yet their love to each other continues. Her sighs may be seen ascending from her bosom, the wooded hills, in vapoury mist toward Heaven, and Heaven weeps down his tears upon her, the dew drops. Tane—the name signifies man, or male—had now leisure to think of himself. He wandered about by the springs of water, in the woods, among birds, and sought a wife meet for him, but found none. At last he turned to his mother, the Earth, and she advised him to take Hinehaone (maid formed out of ground). With her he had one daughter, named Hineataura (maid of the bright morning sky). When the daughter was grown up she became Tane's wife, but did not know that he was her father. They had some children, whose names seem to indicate decay and death. Once, when Tane was absent on a visit to his elder brother Rehua, who lived in the tenth stratum of the heavens, Hineataura asked her mother-in-law, the Earth, "Where is my husband?" The mother-in-law answered, "What! Thy husband! He is thy father." When she had learned this she was so overcome with shame, that she took leave of her mother-in-law and went down into the nether world. When Tane came back and asked for his wife, his mother told him that she was gone to the lower world, but had left word that Tane was to stay and to bring up their children. Tane now went himself to that world of darkness to bring up again his wife. He came to a house and asked toward the gable of that house, but received no answer. Ashamed and dejected, he went round the house, and then a voice inside the house said, "Tane, where art thou going?" "I follow our sister," he answered. Then the voice said,

"Go back, Tane, to the world of light,
To educate our fruit.
Leave me in the world of night,
To draw down our fruit."

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Nicaragua Islanders

THE JOURNAL
OF THE
ANTHROPOLOGICAL INSTITUTE
OF
GREAT BRITAIN AND IRELAND.

DECEMBER 11TH, 1876.

Colonel A. LANE FOX, F.R.S., *President, in the Chair.*

The minutes of the previous meeting were read and confirmed.

The following new members were announced :—

Rev. A. H. SAYCE, Queen's College, Oxon.; G. TIPPETS, Esq., Plymouth; T. F. PEACOCK, Esq., Gray's Inn.

The following presents were announced, and the thanks of the meeting were voted to the respective donors for the same.

FOR THE LIBRARY.

From the AUTHOR.—Christian Missions. By the Rev. A. C. Geekie, D.D.

From the SOCIETY.—Proceedings of the Literary and Philosophical Society of Liverpool. No. 30, 1875-6.

From the SOCIETY.—Transactions and Proceedings of the Royal Society of New South Wales, Vol. IX.; Mines and Mineral Statistics of New South Wales; Transactions of the Philosophical Society of New South Wales; Mineral Map and General Statistics of New South Wales; Progress and Resources of New South Wales.

From the LIBRARY.—Twenty-fourth Annual Report of the Manchester Public Free Libraries.

From DR. JAMES HECTOR.—A Compendium of Official Documents relative to Native Affairs in the South Islands. 2 Vols. Fol. Compiled by Alexander Mackay.

From the ASSOCIATION.—Journal of the Royal Historical and Archaeological Association of Ireland. Vol. IV, Nos. 25 and 26.

From the EDITOR.—*Matériaux pour l'Histoire de l'Homme*, for November, 1876.

From the EDITOR.—*Revue Scientifique*. Nos. 23 and 24, 1876.

From the EDITOR.—*Nature*, to date.

The following paper was then read by the director in the absence of the author:—

NOTES on the JAVANESE. By A. H. KIEHL.

AMONG the many islands which compose the so-called Malay Archipelago, the Island of Java is undoubtedly the most important, because of its extensive commerce, its great fertility, and by reason of its being the seat of the Dutch Colonial Government. It is mountainous and of volcanic origin; its south coast is bold and rocky, but its north coast is low and swampy, especially near the rivers, which wash down the soil from the mountains and deposit it in extensive mudbanks at their mouths; a fact which tends materially to increase the superficial area of the island northward, but which is a serious obstacle to the formation of artificial harbours. It is one of the numerous volcanic islands forming a regular volcanic chain from Acheen Point to Ombay Straits. Off its northern shores numerous diminutive islands of coral formation are found, the coral-lines being still at work in some parts, while in other parts the coral rock is left by them to decay.

It is situate between the 6th and 9th parallel of south latitude, and the 105th and 115th meridian east of Greenwich, and enjoys a season of dry and fine weather from April to October, and a rainy season from October to April. Its size is about equal to that of England (Java 51,336, and England 50,922 square miles), and its population, which, according to Mr. A. R. Wallace (*Malay Archipelago*, Vol. I), amounted in 1826 to 5½ millions, and in 1865 to 9½ millions, has actually trebled in 48 years, for by the last census it was 16½ millions (1874), giving an average of 320 persons to the square mile, as compared with 260 persons to the square mile in the United Kingdom (21,500,000 in England, 1,212,000 in Wales, 3,360,000 in Scotland, 5,403,000 in Ireland = 31,475,000, or 121,608 square miles), and being yet annually increasing. The great fertility of the country, however, will allow of a very much larger number of inhabitants, there being yet plenty of uncultivated tracts of land overgrown by luxuriant vegetation (according to some authorities only one-third is cultivated), where the tiger, the rhinoceros, the wild boar and the ape, roam unmolested.

I consider the aborigines of Java, Madura, and Bally, to consist of two different branches of the Malay race; the Malays proper forming the one, and the Javanese proper, the Madurese, and the Ballinese forming three different families of the other branch.

a. *General description.*—All these four have much in common, their stature being comparatively small, only reaching a little above the shoulder of an average-sized European: their colour is light-brown, their hair jet-black and straight, their eyes dark, their noses flattened, their nostrils distended, their teeth regular, and their bodies are well-proportioned. Their limbs, and especially their fingers, are very pliable, and they seldom grow corpulent, and never very old.

b. *Distinction between Javanese and Malays.*—Notwithstanding all these points of resemblance, there is but little difficulty in distinguishing the Javanese from the Malays proper. Of the two, the Malays are the smallest and stoutest, their heads are more globular, their faces rather broader and flatter, and their noses rather shorter than those of the Javanese: but besides this, they wear their hair cut and loose (the males), whilst the Javanese and Madurese always wear it long, and tied up in a knot at the back of the head like a woman's. The Ballinese, again, wear it long and loose, only tied by a ribbon or piece of cloth so as to prevent its hanging over the face. These latter are decidedly stronger and taller, as well as more robust-looking than the Javanese. The Sundanese, who inhabit part of the west coast and the islands between Java and Sumatra, resemble the Malays in form and stature, although speaking another language. This nation may be said to be indigenous to those islands, whilst the Malays are known to have come from Sumatra, and to have spread all over the Archipelago in the course of time; yet the period when they settled in Java must have been a very remote one. There is good reason to believe that the name Java, or Yava, applied to Sumatra as well as to Java in olden times. That the Malays do actually belong to a different branch than the Javanese proper is shown, not only by their different language and peculiarity in dress, but also by their living together in villages apart from the Javanese, except in the western part of the island, where the Malays predominate, and where but few Javanese proper are found.

c. *The women.*—The Javanese women are small, have beautiful dark eyes, and long, thick, black hair, fine busts, and, when young, have beautifully white and regularly set teeth.

d. *Feet.*—As to the feet of these people, not being accustomed to wear shoes, their toes stand out, apart from each other; and the muscles of the toes are generally so well developed, that

they need not stoop down to pick up an object, but manage it very well with their feet.

e. *Languages*.—Of the Malay language, it is said that it is spoken from the Cape of Good Hope to the Molucca Islands, which probably means that there are some people found in the several countries enclosed within the above limits who speak it; but although this assertion does not rightly describe the true position the Malay language occupies, yet it is quite certain that from Acheen to New Guinea it is the language with which a traveller can get along, the same as with French on the Continent of Europe. It is a soft-sounding language, but poor in words, and contrasts in this respect unfavourably with the rich Javanese language (or rather languages), which has its own written characters and a literature of its own, and of which the Malays in Java have adopted many words and expressions, as they have also from the Portuguese.

Both languages are admirably adapted to poetry. Nearly every native of this country can extemporise little songs, and they are so fond of doing this, and conversing in this poetical way, singing their ditties in a whining, melancholy manner, that the singing of these so-called pantongs occupies nightly all the time between their lying down and their actually dropping off asleep.

f. *Cleanliness*.—As in this hot climate bathing is a great treat, and as the Javanese are very clean in their persons, the rivers of Java are hardly ever seen without at least some bathers of either sex. Both sexes are good swimmers, but they swim like dogs, stretching out first one arm and then the other, and the legs likewise. They wash their bodies, and especially their hands, very often; also they are very clean as regards their food, and wash their rice six or seven times before boiling it. The right hand prepares the food, and is never used for the purpose of taking up or throwing away dirt, which is always done by the left hand.

g. *Filthy peculiarities*.—In one respect, however, they are filthy. Whether from superstition or stubbornness, they do not use fine-toothed combs, and as their hair is long and thick, and kept covered by a handkerchief, they nearly all suffer from having a colony of parasites on their heads, which they have no means of getting rid of but that of asking a friend to help them. Friends so employed may be met by the score every day, and as some of these fellows are so tender-hearted as to be unable to kill these parasites, they often throw them away only, a fact which, I need hardly say, is extremely dangerous to passers-by.

h. *Articles of dress*.—The dress of the males consists of the *sarong*, a cylindrical piece of cloth, mostly coloured calico, about

2 yards wide and 1 yard long, which is drawn tight around the loins, and folded up in front, and then rolled up so as to keep it tight. A belt is then fastened over this. The *badjoe*, or jacket, has very tight-fitting sleeves, a standing collar, and a row of buttons, placed very close together. This is also mostly of calico, chintz, or print, but the chiefs and princes often wear fine cloth, or velvet jackets, with white waistcoats underneath, having gold buttons. The *tjelana*, or trousers, generally worn short by the Javanese, but long by the Malays. The *stangan kapala*, or head-kerchief, worn in different ways by the Malays and by the Javanese, the latter, as well as the Madurese, winding it around their heads and the knots of hair at the back of their heads, leaving the two tips to hang loose behind, and the Malays generally hiding the tips, and wearing them more turban-like. The Ballinese merely use narrow strips of cloth around their heads, exposing their thick hair to the sun's rays, and allowing it to flow loose behind. Around the loins, over the belt, the Malays and Javanese wear one or more scarves, under which the purse or money-bag is concealed, and into which the kreese or dagger, with its scabbard of bamboo, brass, or even gold, is stuck at the back. Those who cannot afford the luxury of a kreese, always carry a chopping knife, or a small hatchet in their belt. The Malays often dispense with the sarong, or tuck it up high; the Javanese often dispense with the trousers, but when out hunting, it is a common thing for them to wear long trousers, with straps passing under the feet, and leather gaiters besides, which leave only the toes uncovered.

The dress of the females resembles that of the males, except in the matter of the head-kerchiefs and the trousers, which they never wear. The *badjoe*, or jacket, is not worn by adult females; it is longer than that of the males, and is superseded by the *kabaya*, or tunic of white or coloured calico, or silk, which is worn open in front, or crossed over the breast. The *sarong* is worn like that of the males, and consists of the same materials. The *slendang* is an article of dress resembling the sarong; like it, it is worn around the loins, over the sarong, or slung over one shoulder; or used to carry a child or any other load in, as the case may be. The well-to-do women often wear very costly belts around the loins, also bracelets (*galangs*) and rings. The sarongs and slendangs are sometimes of very rich material. The slendang is waved about very gracefully by the *ronggings*, or female dancers, at evening parties or festivals; and such is the charm it then possesses, that no male member of the company will refuse to take hold of the other end of the slendang which is offered him by a pretty rongging, and to dance with her for a while. A pair of pretty, gold embroidered little slippers, which

only hide the toes in part, are often worn by rich ladies, and sandals are sometimes worn by the men, but in other cases the legs and feet are bare.

The hair, which is shining black, is often adorned with flowers, and very often odoriferous herbs are tied up in the knot of hair. The men also will adorn their hair with flowers on festive occasions. They also often protect their eyes against the fierce rays of the sun by a screen or cap without a crown, but more often by the *toodoong*, or sun-hat, a sort of umbrella shaped contrivance, made of bamboo, and coloured or gilt and varnished, so as to make it impervious to either sunshine or rain. The ladies, however, prefer the *payong*, or sunshade, which article is also extensively used by the males; a prince or a grandee being distinguished by this or that particular sort of sunshade (the very highest having one completely gilded over), which is carried by a servant walking behind him, another servant carrying the condiments for chewing the sirih and betel-nut.

The children of both sexes are allowed to go naked up to their eighth or ninth year, and it is not at all unusual to see a little girl running about in that state one year, and to find her back a married woman, or even a mother, at the end of the next. The boys are circumcised about the same age, and from that moment they go fully dressed, whereas they either go entirely naked, or have only a sarong slung over one shoulder, or girt round the loins shortly before.

i. *Horsemanship.*—The Javanese are very good horsemen, but their horses are small, not larger than small ponies, but very spirited. Their saddles are different in shape from ours, and in riding, the Javanese only puts his big toe into the stirrup, instead of the whole of the foot.

It is a mark of respect for a rider to dismount, sit down by the roadside and uncover when a personage approaches, and not to mount again until he has passed. Princes and rulers are always so revered, and often the horseman follows in their suite for a while before he proceeds on his own journey.

j. *Sitting.*—To sit down in a crouching attitude is considered respectful. A servant when he has a long report to make, or to listen to his master for some time, always sits down on his haunches. If, however, the talk is not likely to last long, he only bows, lifts his hands as if for prayer, and joining them together, lowers them until they reach his knees; this being repeated as often as he has to give a reply. Whenever a Javanese wants to make himself thoroughly comfortable, he always sits down on his haunches, or lies down altogether, laziness not being considered a vice, nor yet an improper thing, but something natural, like hunger and thirst. Chairs are now in

general use by the more refined Javanese, especially easy and rocking chairs; but yet the national custom is always to lie or sit down on the floor, or on the bamboo couch which is fixed in every house, and serves for seat, table, and bedstead alternately.

k. *Bedding*.—The *tikar* or mat, and the *bantal* and *bantal gooling*, square and round pillows, filled with kapoc, constitutes all the Javanese's bedding, which he can roll up and walk away with quite as easily as the healed Hebrews of the New Testament. He rolls it out at night, and spreads it on his *bali-bali*, or couch, and in the morning he rolls it up again, and puts it into a corner.

l. *Houses*.—The houses of the Javanese and of the Malays are built of bamboo, roofed with leaves of the sago or other palm tree, and are only one story high. They contain neither fireplaces, chimneys, nor glass panes in their windows. Those of the poor have no other flooring than the ground, one or two *bali-balies*, at a height of about 3 feet, and a sort of attic under the roof. Those who are better off have houses containing two, three, or more rooms, and a verandah in front, and also at the back. The flooring is made of split bamboo, flattened out into boards; they also have a sort of Venetian blinds in the windows and doorways and outhouses for cooking, which the poor people always do in the open air.

Under the shadow of the overhanging roof, naked children, fowls, goats, and tame monkeys, may often be seen playing about and running in and out of the never closed doors. Under the mighty cocoa-nut trees, which are quite indispensable to the existence of the Javanese, or in a sort of stable, one or more cows or bullocks, a cart, a plough and a hoe, rude implements of agriculture, are often met with; and wells, with brick-built and white-washed walls, are found in abundance near every village.

A substantial one-roomed bamboo house could be built (in 1850) for three rupees (5s. sterling). It takes a few weeks to build one, but it takes far less time to take it down and remove it. A gentleman at Sourabaya, having bought some land for a shipbuilding yard, stipulated that the ground should be cleared of buildings at a given time. Some hundred dwelling-houses stood on this ground, in fact, quite a village, and when the shipbuilder saw nothing done up to the day before the stipulated time, he complained to the magistrate, who put him off till the morrow. What was his surprise when he visited the spot on the forenoon of the next day, and found not a vestige remaining of the entire village, may be better imagined than described. Early in the morning each of the occupants of every house had lent a hand, carrying away his portion of building material and furniture; so that no longer any ground of complaint existed.

The houses of the Ballinese are built of stone (unhewn), with finely carved and painted pillars of wood inside, supporting the roof, decked with pantiles or bamboo, and palm leaves. The door gives entrance into the middle of the only room, and facing it is something resembling an altar. A bamboo couch extends on each side, from wall to wall, and the bedding consists of well-made mattresses, stuffed with kapoc. One or two steps of stone often lead up to the door.

m. *Utensils for cooking, &c.*—Rice being the staple article of food of the Javanese and Malays, a few neatly made baskets of bamboo, in which it is washed and often also steamed, a bamboo sieve, a cocoanut ladle, two or three copper or earthenware pots, and a saucer with a wooden rubber to rub the sambal (a condiment for the rice), and sometimes a china basin and spoon, is all the housewives want for their cooking utensils. A yoke, two pairs of bamboo water-buckets, or a pair of water-baskets, and a broom of rice-straw with a bamboo handle, these complete the list of articles for household use. They eat with their fingers and drink from the ladle or out of a water-bottle without touching it with their lips, pouring it into their throats in a small stream.

n. *Food.*—1. (*Cocoanuts.*) Next to the rice, of which I shall treat more at length, the cocoanut is the most indispensable article of food to the Malays and the Javanese. Whenever a child is born, a cocoanut is planted, and this is the only record held of its age. If it asks how old it is, the parents point to the young tree, telling the child that it is as old as that tree. When the cocoanut has grown to its full size, the outer shell yet being green, the nut contains water only, which is then a very favourite drink, and it is certainly very refreshing, although not what we would call nice. When the colour of the shell turns yellow and brown, the woody shell commences to form, and a thin coating of the real nut, like the white of a soft-boiled egg, commences to gather against the sides. This, when scraped out with a spoon, is very nice to eat, and the water inside is then still good and refreshing. But when the nut is ripe, and the wooden shell quite hard, then the outer shell has already become hairy and the water inside is no longer considered a nice drink. It is mostly thrown away, but the nut is taken out, rasped, steeped in hot water, and pressed out, the milky juice being used for cooking. Or the nut is boiled for the making of cocoanut-oil. Often the rasped particles are fried and used as condiments to the rice. To climb up a cocoanut tree, the Javanese takes a handkerchief or a string, ties it into a sling, into which he slips his feet, and then places them against the tree, one on each side, adjusting the sling so that it will suit the size of the tree. Hq

then takes hold of the stem with his hands, reaching as high up as he can, draws his knees up to his elbows, presses his foot-soles firmly against the stem, so as to obtain a firm footing, and repeats this operation, by which he gains about a foot and a half each time, as often as required, until he reaches the top, when he grasps a branch with his left hand, and with the right hand reaches his *parang* or chopping knife, with which he cuts off as many nuts as he wants, letting them fall to the ground. Some of the lower trees he cuts steps in, by which the ascent is easily made.

2. (*Bananas.*) The banana or pisang tree is also very useful to the Javanese. The better kinds of this fruit are very sweet and agreeable to the taste. When unripe and boiled, it resembles the potatoe, but it is in West India and not at Java that it is so prepared; when ripe, it is either eaten raw or coated with dough and fried in cocoanut-oil. When dried, it tastes like the date. The leaves are used for packing purposes, like paper in Europe. At every bazaar pisang-leaves are sold, together with small bamboo-pins; and anything eatable which is sold there is wrapped up in a pisang-leaf and pinned up with bamboo. The stem of the tree is used for sticking the figures of the *wayang* or theatrical performance in.

3. (*Insects as food.*) Under various circumstances the Javanese will eat different insects, such as white ants, cockroaches, locusts, and even the abominable *walang sangit*, a species of cricket which emits a very foul smell; but of pork they have an undisguised abhorrence, like faithful Mahometans. These remarks apply also to the Malays.

4. (*Sugar.*) Besides from the sugar-cane, the Javanese obtain sugar from the cocoanut water, and from the sap of the areng palm. It is sold in half-spherical lumps, and is nearly black.

5. (*Condiments to the rice.*) Salt and cayenne pepper, fried shrimps or other fish, salted or fresh, onions, garlic, cucumbers, and other vegetables are used as condiments to the rice, and the favourite compound is sambal, consisting of chillies, onions, salt, and *trassee*, mixed and rubbed to a paste in a dish or saucer. This *trassee* is salted shrimps in a state of half putrefaction. Eggs, salted and boiled hard, are also used. They are salted by being put into salt clay. Maize and Yams are also used for food at times.

6. (*Rice.*) The numerous appellations given by the Javanese to rice in its various forms and conditions, sufficiently indicate the great importance attached to this grain by the natives. A rice field is called a *sawah* when the rice is cultivated in irrigated fields (in the plains or on the mountain slopes), a *tipar* when cultivated regularly but without artificial irrigation, and a

gaga when the rice is sown in recently and but imperfectly cleared ground on the mountains. The young shoots are called *beebit*, the growing corn is called *padie* (*paree* in Javanese), when separated from the straw it is called *gabbah*, when the husk is taken off it is called *brass*, when boiled dry it is called *nassee*, and when boiled wet as in Europe, it is called *booboor*. It is then often boiled with cocoanut-milk.

The Javanese are very fond of agriculture, and especially of the cultivation of rice. For this purpose many mountain slopes have been transformed by them into immense flights of steps or terraces; each terrace or *pittakh* being perfectly level and bordered by a dam. A beautiful system of irrigation allows these fields or terraces to be inundated or watered and drained as occasion requires, and some mountains are so cultivated up to a height of between two and three thousand feet above the sea level. Nothing can equal the beauty of these velvet-like steps up the mountains, traversed by little rills of water, glittering in the bright sunshine.

o. (*Cultivation of rice.*) In order to obtain a crop of rice, it is not sufficient that the ground be ploughed three or four times over, and then be sown with corn; on the contrary, it requires the planting out, one by one, of the young rice plants or *beebit*, previously closely sown in separate fields. Women and children generally undertake this task. The so-planted fields are kept under water for several weeks, being only occasionally drained off for a day and then irrigated afresh. Only when the plants are full-grown the fields are allowed to become dry. Then it is that long strings are spread out over the fields, having numberless little rags, dolls, bamboo-bells, and ornaments attached to them in order to scare away the birds, especially the so-called Java sparrows (*Fringilla oryzovora*); and these strings are every now and then shaken by the little folks whose duty it is to watch them, from little bamboo-huts forming centres to these gigantic cobwebs. Some miniature windmills may also be seen in full swing; these are placed there to frighten away the evil spirits. When at last the crop is ripe, the fields have entirely dried, and the reapers, men, women, and children, hasten to the harvest with songs of gladness, dressed in their gayest colours, and adorned with flowers. Popular prejudice, and not necessity, obliges the stalks to be cut, one by one, about a foot below the ear, by which process the whole of the valuable rice-straw is destroyed, for it is too short for use, and the rest, being stubble, is burnt. The rapidity with which the cutting proceeds is astonishing, if it is considered that the stalks are cut one by one, yet if contrasted to the European modes of reaping, it may be considered a slow process. The wages earned are paid in kind,

and are carried away every evening by the women in their *slendangs*; they range between twelve and twenty per cent. of the crop reaped. The remainder is garnered in *lombongs* or barns of square forms, widening towards the top, built on poles erected on large blocks of stone. *Kandang*s or stables are used for the bullocks, of which the farmer seldom owns more than two, and mostly only one. They are called *kerbo's*, and are very lazy, but very intelligent, and as faithful as dogs. They delight in bathing and covering themselves with mire, by which means they keep off the sting of insects.

The different seasons for the cultivation of the rice, for sowing, planting out, drawing off, reaping, &c., are appointed by the priests, and vary in their duration from 25 to 40 days.

Superstition also prevents the Javanese from applying other manures to their rice-fields than the ashes of the stubbles and the mountain-water, which latter, no doubt, formerly answered well enough, but which now often fails to supply all the necessary fertilising ingredients, these having in the course of time gradually been washed down from the mountains and absorbed in former crops. The crops might certainly be doubled, if not trebled, under proper treatment; proofs thereof are not wanting in the lands owned by European landowners, but the soil belongs to them, say the Javanese, and they mean to do with it according to their *hadat* or custom!

A great loss is also occasioned by the manner in which the rice is deprived of its husk. This is done by pounding it with a wooden pestle in a large wooden mortar, and a large percentage of the corn is thus broken, and much is ground to powder; so that about twenty per cent. altogether is lost for human food. Yet it is so difficult to convince them of their errors, that whereas steam and water-mills exist, owned by Europeans and Chinese, in which natives are employed, yet the number of native mills is extremely small.

Numberless are the forms in which rice is eaten. Dry or wet, in the form of a mass of gluten, or in that of nice cakes, in leaves, or in little mats, in nearly all these forms it is obtainable, together with some condiments at the bazaars, or at the corners of the streets or roads. For about twopence visitors may obtain at the stalls in the bazaars a leaf of beautifully white rice, a saucer of fried shrimps, some sambal, fruit and sweets, together with some cooling drink, or, if he prefers, a cup of execrable coffee over-sweetened and without milk, which is the way the Javanese always drink it.

Rice is sold by the *gantang*, a measure made of a large coconut-shell so as to contain about $1\frac{1}{2}$ lbs., or wholesale by the *picul*, about 130 lbs. English. A *koyang* contains 100 piculs.

p. *Cultivation of fruit and other trees.*—Although the Javanese are very fond of agriculture, it is a remarkable fact that they do nothing to improve their fruit trees. The only efforts in that direction have been made by the Ballinese. The way in which cuttings are obtained, however, is deserving of notice. In that hot climate cuttings, if planted as they are in this country, would dry or become scorched. The practice of the Javanese, however, is to put a lump of damp earth around the branch just above the place where it is intended to cut it, and to wind a leaf around it. After a certain time tiny roots shoot out from the branch into this lump of earth, and when these have become sufficiently large and strong, the branch is cut below the lump, the leaf removed, and the whole carefully planted in a shady place.

q. *Salt-making.*—Salt is obtained by letting the sea-water into enclosed fields at high water, and then shutting it off. The rays of the tropical sun soon cause the water to evaporate, when the salt remains, imperfectly crystallised, brown from the mud, and smelling strongly of the fishy remains which adhere to each crystal; and it is in this repulsive state that it is most relished by the Javanese, who for it reject the finest white salt.

If you want to remain on friendly terms with the people of the districts where salt is made, you should not protect your head against the fierce rays of the sun by a sunshade or a sun-hat, as popular prejudice is very strong on this subject.

r. *Music.*—The musical instruments of the Javanese consist of the *Biola* or one-stringed violin; of different sets of hand-bells arranged in frames, some frames containing four low-toned bells, others as many as 12 or 14; then they have several pairs of gongs or tamtams of different sizes and tones; one very large gong; and, finally, an instrument of a coffin-like form containing, say, 15 small pieces of flat cut bamboo, arranged in a row, and played upon by a small wooden hammer with a long and pliable handle; the longer pieces of bamboo sounding the lower notes, and the shorter ones the higher notes. All the other instruments are played upon by muffled or unmuffled hammers, varying in size, except the biola, which is played upon by a bow.

The biola leads off and gives the tune. Music notes are never read from, everything is played from memory. Wind instruments are not used. A band generally consists of from 10 to 12 musicians, and on the whole the music is not unmelodious, but when heard for any great length of time it becomes rather monotonous. Such a band is called a *gamelang*, and without it no festivity is complete. The greater the festivity the longer the *gamelang* has to play, and at marriages it performs generally for three days and nights in succession, with but short intervals.

s. *Theatrical performance.*—The *wayang*, or theatrical performance, is a very favourite amusement. In the portal of a house, reaching from wall to wall, a large cloth is spread, behind which, at a reasonable distance, a lamp is placed. The artist who performs has a legion of finely cut flat wooden figures of the most grotesque forms, each of them armed with a sharp point at the bottom, with which it may be stuck into the stem of the pisang (banana) tree, that keeps the cloth down at the bottom. He moves the figures so that their shadows fall upon the cloth, and alters his voice to suit the characters of the performing figures. A peculiarly shaped figure, somewhat resembling a fir tree, is used to represent either a mountain, a tree, or a middle partition, as occasion may require.

All the pieces represented are historical dramas taken from the ancient and legendary history of Java. The houses being always open, a crowd generally gathers to witness the performance from the wrong side; and whenever any peculiarly striking or well-performed passage occurs, their applause will mix with that of the spectators inside, without anybody thinking this too much liberty.

t. *Other amusements, sports, &c.*—A very popular amusement is the bull-fight, on which often large sums are waged, but only by the owners of the contending beasts. Cock-fighting also is very popular; for this purpose the cocks are armed with long and sharp steel spurs. Crickets are also set to fight each other for the amusement of the people. A less common but always much enjoyed amusement is the fight of a tiger with a bull, which takes place within a strong bamboo enclosure, and in which the bull almost always gains the victory, the tiger often being too much frightened by the noise and by the sight of the people around him to be able to fight with any chance of success.

The Javanese are also very fond of gambling. In consequence of this tendency they often run into debt and then have to borrow money, for which the Chinese shopkeepers and money-lenders will take their labour in return. Chinese tradesmen are daily seen vending their wares from house to house, shaking their little rattledrums, and being followed by one or more Javanese carrying heavy loads of goods for their temporary master. A good many days the impoverished gambler will thus have to follow the well-dressed and clean-shaved Chinaman before he has regained by the sweat of his brow the money lost through one hour's gambling. Yet only very few grow wiser by the lesson.

Hunting.—Most of the Javanese princes and grandees are passionately fond of hunting, especially deer hunting. In the extensive forests and thickets of the interior of Java stags

abound, and to make these leave their retreats and to attract them towards the plains, the long grass or *alang alang* with which these plains are overgrown, is burnt off about a fortnight prior to the day appointed for the hunt. A very few days will suffice for the young grass to spring up again, and the deer then come out of the woods during the night to graze upon the plains. As soon as it has been ascertained that they are doing this, a number of sportsmen, often as many as forty, all of noble descent, gather together, and, placing themselves at about equal distances around the plain, they drive several buffaloes into the thickets to frighten out the deer, which the hounds then pursue, and try to drive towards their masters who lie in wait mounted on spirited horses of Persian or Arabian origin, and armed only with a short and sharp, slightly curved sword, with which they have to pierce the deer. [This is fine sport indeed.] The horses seem to be imbued with the same passion as their masters, for they literally fly along, through thorn-bushes, over hedges and brooks, making light of any obstacles, and never resting until the stag is pierced. But accidents of a serious and often fatal nature are by no means rare. Yet this rather adds to the charms of the sport, at least in the estimation of the true Javanese, whose religious conviction tells him that he will not die before his time.

u. *Religion and superstitions.*—The Javanese mind is full of superstitions. The Brahminical religion appears to have existed in Java from very ancient times, and to have been followed by Buddhism, such as it now exists at Balli and Lombok. The number of ancient temples now in ruins, built of huge blocks of stone, and most elaborately sculptured, and among which those of Brambanan and of Boro Bodor are the most noteworthy, denote the existence of a civilisation at a very early period in history, far beyond that of the Javanese of the present day. Other ruins exist of smaller temples, such as those of Djabang, near Probolinggo, which are built of bricks or tiles, without any trace of mortar. These appear to belong to a more recent period. In the fifteenth century the Mahomedan religion superseded Buddhism, and up to the present day the Javanese and Malays are Mahometans, at least in name. Sometimes, especially when incited by the priests, they become bigoted and enthusiastic; but as a rule their mind is bare of true religious feeling. At odd times a few such enthusiasts may be observed singing and praying in the porch of a *messigit* (mosque) for the greater part of a night, but these are generally preparing for a pilgrimage to Mekka, or some less distant place, in order, on their return, to be ordained as priests, when they may wear turbans, and will commence a life of idleness, doing nothing, except

perhaps, inciting the populace to revolt, or to make *amokh*, and living like leeches, on the toil of their fellow men. But by far the greater part of the Javanese have no really religious feeling. They are naturally of a kind, peaceful, hospitable, and confiding disposition, full of reverence for their princes and native rulers. They look upon religion as a kind of custom, a *hadat*, as they call it, and they have as a rule no idea of a soul-stirring influence governing a man's actions. They like to enjoy the liberty of Islam, to marry more wives than one, but of the duty of abstaining from wines and spirits they think very lightly; yet it must be said they never drink to excess. They call upon "Allah," as being the only true God, of whom Mahomet is the prophet, yet there is hardly a being in the animal kingdom, or an object in nature, but in some parts of Java there are some people who either directly worship it, or ascribe to it some supernatural influence. The tiger, the cow, the monkey, the beautiful *waringgin tree*, and the stone image of antiquity, as well as the spirits of the mountains, are all worshipped, feared, or revered, as the case may be.

There is an island at the mouth of the Juana river inhabited by sacred (!) monkeys, who are regularly fed and periodically worshipped by the natives of the neighbourhood.

There is a steep cliff on the south coast of Java, in the crevices of which edible birds' nests are found. To reach these a perilous descent has to be made by means of ropes, and no native dares to go down these ropes without first propitiating the guardian goddess of the place with some offering or other.

In a field at Batavia, there was an old piece of cannon laid, which had served at the siege of Palembang; and this cannon was daily worshipped by numbers of persons of both sexes, who brought fruit, coppers, rice, and especially miniature sunshades, as offerings; these they stuck into the ground round about the cannon deity. To this gun was ascribed the power of curing sterility, and to receive its benefits the worshipper had to sit astride it for some time. At any time of the day you might see some of these women, attired in their very best, and adorned with flowers, sometimes two at a time, sitting on this gun; and this practice was continued for years, to the benefit of the priests, who pocketed the coppers, manufactured the sunshades, and sold them at a good profit. At last this cannon was removed by order of the Colonial Government, to the great dismay of the hadjees, but without injuriously affecting the increase of the population.

With regard to their religious feeling, it has been often said that but little good has as yet resulted from the missionary labours among these natives. This is true enough, but instead of ascribing it to the incapability of the Javanese for receiving

Christian truths, I would rather ascribe it to the very small number of really earnest and really competent missionaries, and to the uncultivated state of the Javanese mind at the present day. The next generation, better instructed, and not so thoroughly unfitted for religious thought by Mahometan licentiousness, will, I have no doubt, show better results. The bad example given them by European Christians, may be regarded as one very great deterrent from their embracing the Christian faith.

Circumcision is practised by the Javanese, and is generally made the occasion of great festivities. The hero or heroes of the day are then gaudily dressed and ornamented with bracelets, necklaces, and flowers, and have their arms, hands, and faces painted yellow. They are paraded in a carriage, behind which follow the family and friends, sometimes also in a carriage, but generally on foot; and a gamelang always accompanies the procession, a heavy gong going either in front, or in the rear, and a crowd always gathers, and partly follows the procession.

v. *Marriages*.—The ceremony of marriage is performed with much the same outward show and processions as that of circumcision. Now-a-days the bridegroom and bride, as well as some of the family, are often seen in a carriage; but the good old Javanese way is for them to be seated on horseback, riding side by side to the place of wedding, both dressed alike, with bare arms, and painted yellow, as in the case of circumcision; both ornamented with flowers, bracelets, and jewellery, so that it is difficult to distinguish the bridegroom from the bride. The gamelang accompanies the procession, and plays as long as the festivities last. The bride has to undergo a series of very trying ceremonies. She has to sit still, without moving, for a very long time, dressed up as a doll, to be stared at by the multitude of guests and visitors; and she is in reality sold by her parents, sometimes seeing her intended husband for the first time on the wedding day; sometimes being betrothed long before her tenth year. Little boys and girls are sometimes so married or betrothed before they can take care of themselves, and of course they separate after the ceremony, and return to their parents' homes.

Betel chewing and teeth filing.—As soon as a girl is married, she has her teeth made smooth by filing, and commences to chew *sirih*. The *sirih* is a creeper plant, resembling the convolvulus, and is cultivated in gardens. Every morning immense quantities of fresh young leaves are brought to market, and sold at every refreshment stall. Three or four of these leaves are taken together; a little lime, a piece of gambier, and a quarter of a betel or penang nut are folded up in them, after which the whole is

put into the mouth. After a while, when it has been ascertained that the spittle has assumed a vermilion colour, a pinch of finely-cut tobacco is rubbed once or twice over the front teeth, and then also put into the mouth. The Javanese, especially the males, are fond of taking the quid of tobacco between the lips, in front of the teeth, showing it partly protruding out of their mouths, whilst the sirih itself is lodged behind their double teeth. When a Javanese sits down on his haunches, chewing his quid in the manner described, he presents a very stupid, and, to European eyes, ridiculous appearance. Of course he cannot very well join in any conversation with this encumbrance between his lips, so the only words he utters are monosyllables. The use of the sirih turns the teeth quite black, and so a woman with black, smooth-filed teeth, may at once be recognised as either a married woman or a widow. Polygamy is allowed, and practised by the wealthy: bigamy is not uncommon, yet the majority of people have only one wife. They are very jealous, and often such jealousy leads to their making amokh (committing wholesale murder).

w. *Good workmen.*—As a rule, the Javanese are good workmen, and although they have not the ardour of the European working man at the outset, but commence work in a slow, almost lazy sort of way, yet as they keep on working incessantly, like a machine, never leaving off to rest or breathe, they do more work than any European in that hot climate can accomplish. In the art of making *kreeses* or daggers they excel, as well as in boat-building.

x. *Proas and Canoes.*—No nation in the world can beat the Javanese for fine models for boats and canoes. Their fishing boats are as swift as birds, shallow, like rafts, and sharp, like clippers; broad in the beam, fitted with two masts, and able to carry from twenty to thirty men, besides their gear, netting, and cargo of fish. They are timbered and planked, have raised stem and stern, like gondolas, and are painted white, with a mixture of lime and rock-oil. The smaller boats, as well as the canoes, which consist only of trees hollowed out and fashioned, are furnished with outriggers; for the spread of their canvas is enormous, compared with the size of the boat. The sails are of triangular form, resembling the lateen sails of the Mediterranean Sea. The larger proas are but clumsy compromises, between the European and Malay build and rig.

The Javanese carry on an extensive coasting fishery, and it is a pleasant sight to see all these boats proceed to sea with the landbreeze in the very early morning, and return with the fresh seabreeze in the afternoon, when the pressure upon their sails is often such, that in order to carry on, they have to rig out a plank

to windward, upon which one, two, or sometimes three men are standing, in order to prevent the water from coming over the lee gunwale. The boats are often gaily ornamented with streamers, and beads and flowers at their stems and sterns. In fishing, the nets are spread in a circle; and when half has been let down into the sea, a man descends with it into the water, which, as soon as the circle is completed, he commences to belabour with two pieces of bamboo. The fish, previously attracted to the spot by the throwing of bait (by a man stationed at the masthead), then disperse, and are entangled in the meshes of the net, after which both net and man are hauled on board.

y. *Weapons*.—The only native weapons now in use by the Javanese are the kreeses or daggers. The nations round about, in their wars, used bows and arrows, long lances, and klewangs, or short and broad swords, and there is no doubt that these also were used by the Javanese before their subjection to European rule. The kreeses are not polished, but dipped in lime-juice or other acid matter, which brings out the grain of the steel; and according to the more or less graceful flaming of the grain, the value of the kreesse is enhanced or diminished. Their hilts are often finely carved and set with jewels, and the scabbards are either of wood, of brass, or even of gold, according to the means of their owners. Even if not poisoned, as they sometimes are, these weapons are very dangerous, because of their rough surfaces. But they are hardly ever used except as an ornament, or in case of emergency, which, however, seldom occurs. A kreesse which has pierced a tiger, becomes an object of fond attachment to its owner. The Javanese kreeses are generally about 7 thumbs, or inches long; those of Bally measure from 10 to 11 thumbs.

The Ballinese lances are from 15 to 18 feet long, with steel points, often of snake form and dipped in poison. They are thrown with extraordinary precision and great force, as if they were mere javelins, and the points are just long enough to pierce an enemy right through. Their bows are of hard, tough wood, also of fresh bamboo, and about 4 or 5 feet long. The arrows have bamboo or steel points, often poisoned, and resembling the lance-points. The *Klewangs* are also often poisoned. In the Ballinese wars of 1847 to 1849, the Ballinese and their kinsmen from Lombok had only flints to their muskets, and were but imperfectly acquainted with their use. It was said they looked away from the muzzle when they fired. They had, however, a good supply of powder and shot.

z. *Medicines and Poisons*.—The Javanese women are generally well acquainted with the mixing and administering of poisons. Let their victim be ever so much on his guard, if he does not

actually leave the country, he cannot escape his fate. Some poisons act on the brain only, and render the victim mad. Some very clever native doctors also exist in Java, who have often healed cases where the skill of European medical men fell short. This has been fully recognised by the Colonial and Home Governments, and schools have been founded for the instruction of natives in European pharmacy and medical science; whilst many valuable remedies have been acquired from Javanese sources, among which may be named a remedy against tape-worm. The natives have a simple remedy for less serious cases, consisting in getting all their limbs stretched and folded, so as to regain the necessary pliability. Every finger is then made to crack, every joint is drawn out; and often they have their backs rubbed with the edge of a porcelain cup or bowl, until the skin looks quite red and inflamed: this supplying the place of our Spanish fly.

Conclusion.—A good deal of adverse criticism has often been applied to the manner in which the colony is governed by the Dutch; but, as a rule, those who know Java best, criticise least of all. Mr. Wallace, from whose work, the "Malay Archipelago," I have quoted a few figures, is of opinion that it is the best governed colony in the world. Many eminent men agree with him. And indeed, if his test of increased population be applied, we shall arrive at a like result.

There is, however, no doubt that abuses have existed, and that some abuses still do exist. The system of paying taxes, not in money but in labour, which worked so well at its first introduction, is no longer tenable, and is being gradually abolished. Of a system of oppression practised by the Dutch towards the natives, there is no proof whatever. The quietness of the island proves that it does not exist. From one end of Java to the other, the European traveller may go without carrying as much as a pistol with him. Bolts and bars are things unknown in Java, yet robberies and thefts are the exception.

The labourer in the sugar fields is entirely free to work or no, and to demand his own price for his labour. The forced labour which will most likely remain in use, is that of watering the streets twice a-day, a most salutary custom. All the other forced labour is gradually giving way to a system of taxation in money, for which the tax-taking Government provides good roads, good bridges, telegraphs, police, and all other blessings of civilised life.

To the anthropologist Java presents a rich field for research, probably the richest in the world.

DISCUSSION.

Dr. CAMPBELL, R.N., said he considered the age referred to of *maternity* to be too low, though it might be correct to say the women did sometimes *marry* as young as stated. It is generally admitted that conception does not take place till after the appearance of the menses; and from statistics he collected with reference to a neighbouring country ("Edin. Med. Journal," 1862), such would seldom occur before $11\frac{1}{2}$ years.

In describing the propagation of trees by slips, the author had omitted to state that the first act of the process is to remove a narrow circular part of the bark of the branch over which the soil is attached, and that generally the mass is regularly watered for a time, either by hand or any contrivance permitting a drop falling occasionally on it.

The PRESIDENT also made some observations on the paper, and the Director then read the following paper, in the absence of the author:—

The ETHNOLOGY of GERMANY. Part I. The SAXONS of NETHER SAXONY. By H. H. HOWORTH.

AT the accession of Charlemagne the Franks were masters of all Germany, except that portion inhabited by their old and inveterate enemies the Saxons. For 300 years this sister confederacy, which had remained free from the Roman yoke, and free also from Christian influences, had carried on an almost ceaseless and, very often, aggressive war against the Franks; and it was only the persevering effort of the great Karl himself that eventually crushed and incorporated the Saxons.

The Saxon country south of the Elbe, at this time comprised the three provinces of Westphalia, Engern, and Ostphalia. It was bounded on the west by a series of Frankish *gaus* which separated it from the Rhine and from Lake Flevo; and its boundaries may be admirably studied in the 3rd map of the series *Germany* in Spruner's new Atlas. Let us now limit ourselves, for a short time, to Westphalia, which was, apparently, not an old possession of the Saxons, but one which they conquered from the Franks.

The western boundary of Westphalia followed almost in detail the present western boundary of the Prussian provinces of Westphalia and Hanover. It was separated from the North Sea by certain Friesian *gaus*, now forming part of Hanover and Oldenburgh. On the east it was bounded by the Hunte, a tributary of the Weser as far as its sources, and thence roughly by the present boundary of Westphalia, with whose southern limits it was also more or less conterminous. It was therefore watered by the Ems, the Lippe, and the Ruhr.

The name Westphalia does not appear, so far as I know, before Carolingian times. Its etymology has been analysed by Zeuss, who tells us Falah, with the termination ah, is derived from Fal, *i.e.*, plain or field, and is the same as the Slavic poliak or polian, whence Poland and Poloutsi, and Rubruquis and others give us Valwae or Valania as the equivalent of Poloutzia. There was a gau in Ostphalia called Falaha, and we are told that the Gau Leri was in the Duchy of Falhorn (Zeuss "Die Deutsche," &c., 390, note). Westphalia, therefore, merely means the western plains as distinguished from Ostphalia, the eastern plains, the two districts being separated by the intermediate Angraria or Engern. The name, therefore, has no ethnological import. As I have said, Westphalia was not an old Saxon land, but a conquest, and the people who were ejected were the Bructeri, or Boructuarii, a famous old stock of the Franks, and among the Frankish tribes the last to discard its distinct name.

The Bructeri gave its name to one of the Westphalian gaus, bounded on the north by the Lippe and on the south by the so-called Southwodi or Southwoods, men who were doubtless their frontagers on the side of the Franks. This gau generally referred to in the chronicles as the pagus Borahtia, Bortergo, Borocetra, &c., we are told in several authorities, comprised the towns of Castorp, Perriebeci, Holthem, Hamarichi, Mulmhuson Ismerleke, Anadopa, Geiske, &c., situated between the Lippe and the Ruhr (Zeuss, *op. cit.* 353).

In Spruner's maps we find the Lippe given as the southern boundary of the Saxons in Merovingian and early Carolingian times; and it would seem that Bede has preserved for us a notice of the conquest of the district to the south. He tells us that Bishop Suidbert, having left Britain, went among the Boructuarii, many of whom he converted. But not long after the Boructuarii were dispersed by the old Saxons, upon which Suidbert was given an island on the Rhine by Pepin, where he built a monastery. This island was called Werda ("Mon. Hist. Britt.," 259). Suidbert was ordained Bishop in 693, and died in 713—715 (*id.*). Dr. Latham ("English Language," 35 and 36) questions the fact of the Bructeri having been Franks, for, as he says, they were still Pagans in the 8th century, and argues that they were more Saxon than anything else, and this, too, in the face of the passage from Bede just cited, which is conclusive that they were not Saxons, while they are frequently made Franks in other accounts, Franks who lived on the Saxon march or frontier, and who were at this date probably more or less mixed, but yet Franks, and being frontier men, there was nothing very odd in their having been also Pagans.

Zeuss tells us that north of the Lippe and as far as Hamaland

there is no gau, and he infers that the Khamavi and the Bructeri were once here in contact, the latter stretching out to the north. ("Die Deutsche, &c.," 353, note.) I agree with his inference, but not for the same reason. The fact is, the area he mentions was occupied by a gau, which is defined in Spruner's Atlas, and is there called Nordgo, occupying the north-west projection of Westphalia, and bounded on two sides by the Lippe and the Issel, but it is very probable that a gau with such a name was only a recent creation. From Carolingian times we have to make a great leap to the time of the Classical authors. Among these the two who give us the best information on this area are Tacitus and Ptolemy. The latter, although writing at a later date, seems, in his account of Germany, to have constructed his narrative occasionally from earlier materials. His narrative, therefore, sometimes represents not the state of things contemporaneous with him, but one older. I believe this to be notably true of the Bructeri. Tacitus tells us that the Bructeri formerly dwelt near the Tencteri. "Now," he adds, "it is reported that the Khamavi and Angrivarii have displaced them. The Bructeri being defeated and almost exterminated, with the approbation of their neighbours, either from the hatred of their pride or the delight of plundering, or the favour of our gods. For they favoured us with the spectacle of the fight, in which 40,000 perished, not by the Roman arms, but more magnificently and before our eyes" (Germania). Here, then, we have a notice of the dispersal of the Bructeri and the occupation of their land by their neighbours on either side, the Khamavi and Angrivarii; what that land was we gather from same author. Thus he says, "Cæsar * * * Cæcinam cum quadraginta cohortibus Romanis * * * per Bructeros ad flumen Amisiam mittit" ("Annales" I, 60). Again, "Ductum inde agmen ad ultimos Bructerorum, quantumque Amisiam et Lupiam amnes inter, vastatum" (*id.* I, 60). These passages clearly place them in the country between the Ems and the Lippe. Ptolemy divides them into two sections. The greater and lesser Bructeri; and I have no doubt, myself, that they were in fact the original occupants of Westphalia. Hence they were thrust out by their neighbours. It is clear that the mention of their extinction by Tacitus is a gross exaggeration, and their name appears very frequently afterwards; but it is also clear that they evacuated the greater part of their original country; a larger portion, no doubt, joined their brethren, the other Franks, and passed across the Rhine, while the remainder found refuge across the Lippe in the gau which received its name from them.

Let us now consider who the immigrants were. Tacitus tells us they were the Khamavi and Angrivarii. It may be that we have

in the town of Hamm in Westphalia, which Mr. Latham considers to mark the ancient habitat of the Khamavi, some trace of one set of these immigrants. Dr. Latham's words are: "The present town of Hamm, in Westphalia, probably preserves the name and fixes the original locality of the Khamavi" (*"Germania of Tacitus,"* 112), but this is clearly wrong; the old land of the Khamavi is no doubt Hamaland in Holland. Nor does Hamm seem to be a very old town. I cannot find it mentioned on Spruner's mediæval maps, which are so accurately and minutely drawn. And Hamm, which means merely settlement, may have as little to do with the Khamavi as Ham in Surrey. At all events, it is clear that if there were some Khamavi among those who thrust out the original Bructeri, that they did not alter either the blood or language, for both Khamavi and Bructeri were Frankish tribes.

Putting aside, then, the Khamavi and the remains of the Bructeri, we have to consider who the main body of the Westphalians are descended from, and here one must agree very cordially with Zeuss, that they are in part descended from the Friesian Khauki, who bounded the Bructeri on the north, and partly from the Angrians or Angrivarii, from the valley of the Weser. The presence of a large element of Friesians is shown by two factors, namely, the names of men and of places. In regard to the former, Zeuss has collected several examples. The great feature of Friesian names is the termination in "a." Now in some fragmentary records of the Chancery of Bishop Meinwerk, of Paderborn, 1009-1036, we find mentioned "Ekkica comes, Decanus Haica, Wermza presbiter, Ekkica comes, Geba et filii ejus, Bennaca et frater ejus Tiaza, Tiamma comes et frater ejus Esic, Benna comes et Ekkica comes et Eilbracht et Tada milites." Also in the charters of Junnodines, bishop of Paderborn, of the year 1054, we find "Godeka, Gela et frater ejus Eiza, Araka, Waza, Tamma, Hamaka," &c., &c. (Zeuss, 392).

We will now turn to the topography, which we can best study in Spruner's maps, which give the old forms of the names. Here again the termination in "a" is a characteristic Friesic one, and we have numbers of names with that ending scattered over Westphalia, as Flieðarloa, Withula, Hriasforda, Elmloa, Scagahorna, Anadopa, Werla, Bracla, Sitnia, Alladna, Frethenna. It seems clear, therefore, that there was a considerable sprinkling of Friesians among the elements which went to make up the Westphalians, and Zeuss identifies it with the Khauki. The remaining element which greatly preponderated was the Angrian. We have a numerous series of names ending in "husun," which is such a favourite termination in the Weser valley, as for example, Wihaldeshusen, Alfhuson, Bovinkhusun, Sevinhuson,

Stohchuson, Folkgeldinghuson, Hoianhuson, Bennenhusen, Mulinhuson, Ludinchuson.

I may add that a district of Southern Westphalia is called Hengaren, or Angeron, in Spruner's map, and is probably connected with the Angrian immigrants. These names, when compared with those found in the valley of the Weser, or Weserthal, the old land of the Angrians, makes it very probable that Westphalia was largely re-peopled by emigrants from that district, when its old inhabitants the Bructeri left it. That Engern was the real centre and focus of the later Saxon land, we may also conclude from the fact that all the important Saxon strongholds and fortresses, such as Ehresburgh, were there. There, too, was the homeland of Witikind, if we are to believe the inscription on his tomb in Engern, which tells us he ruled in Angria, in 785 ("Hampson's Geography of King Alfred," '26"). My conclusion, therefore, in regard to the origin of the old Westphali is, that when the Bructeri were ejected or retired from the district, it was overrun and peopled by emigrants from Friesland and from Engern. Let us now turn to the latter province.

Engern, or Angraria, which formed the central division of Old Saxony, included the country watered by the Weser and its tributaries, from Fulda to its mouth. On the north-east it was bounded by the Elbe; on the east, by Ostphalia; on the west, by Westphalia; on the north, by the Friesians; and on the south, by Thuringia, and the land of the Franks. The district has borne the name in various forms, as Engern, Angaria, Angraria pagus Angeri, from very early times. It was divided into two parts, by the Weser "Ostengern, or Angeri, in orientali regione;" and "Westengern, or Angeri, in occidentali regione" (Zeuss, 391). Grimm tells us that south-west of Minden, and not far from Herford, there is a small village, called Enger, or Angeri, which was probably the chief town of Engern, and the very kernel of all Saxonia (Grimm, *op. cit.*, 438). It is not unlikely that the province took its name from this town, which is the supposed site of the defeat of Varus (Latham's "Germania," 113). It is more certain that the province gave its name to the inhabitants, who are called Angarii, by the Poeta Saxo, in the year 772 (Zeuss, 391). But the name is much older than Carolingian times, and occurs in the authors of Roman days, under the form Angrivarii, *i.e.*, Engernware (like Cantware, &c.), the men of Engern; and Tacitus mentions them both in his "Annals," and in the "Germania;" and as Tacitus does not name the Saxons at all, while Ptolemy mentions them as living beyond the Elbe, it seems clear that in the Angarii, or men of Angern, we have a proof that one of the factors which went to make up the old Saxons was present in its later habitat long before the Saxon

confederacy was formed. It is not only the Angarii to which this remark applies, we shall find it is equally true of the Ostphali, to whom we must now turn.

The name Ostphali, like Westphali, is of late date. It also occurs for the first time in Carolingian times, and in the narrative of the Poeta Saxo, in 772. They were also called Austreleudi (*"Annales Laurisenses,"* Pertz I, 154; Zeuss, 389). The name Ostphali is the correlative of Westphali. It corresponds, as Dr. Latham has said, to the English Essex, as distinguished from the English Wessex, Engern answering to the intermediate county of Middlesex.

Ostfala was bounded on the north and east by the Elbe; on the south by Thuringia, and on the west by Engern. It formed the buttress of the Saxon land against the Slavic nations on the east. We have here a corner so enclosed by the Angrivarii, that it is hardly likely that there has been a great displacement of race in the one area and not in the other; and as we have seen, the people of Engern still occupy the land of their forefathers, so we may conclude that probably the Ostphali do also. Zeuss says that they are undoubtedly descended from the Kheruski, so famous in Roman history, as the subjects of Arminius (Zeuss, 391). This view seems very reasonable. Thus Tacitus speaks of them as the neighbours of the Angrivarii. Thus, also, in his account of the campaign of Germanicus against the Kheruski, he tells us the latter were posted in front of a thick wood, backed by a marsh, one side of which was enclosed by a rampart, which had formerly been thrown up by the Angrivarians, as a barrier between themselves and the Kheruski, "*latus meum Angrivarii lato aggere extulerant, quo a Kheruskis dirimerentur*" (*"Annales"* II, 119; Zeuss, 107). The site of this battle it has been supposed is on the right bank of the Weser, and the wood to be the so-called Schaumburger, in the principality of Schaumburgh Lippe (*"Murphy's Tacitus,"* I, 394). This wood was formerly called Scapevelden, see Spruner's map of the German Gaus, 3. If this be the true site, then we must conclude that the boundaries of the Angrivarii and the Kheruski were by no means those of the later Saxon provinces of Westphalia and Angaria, for this is in the very heart of Engern. But it would appear that the name Kheruski was used frequently in a generic sense, and that the Angrivarii and Kheruskans were very closely allied, and both of them subject to Arminius. At all events the great campaign, of which the battle just quoted was only an incident, no doubt took place in the neighbourhood of Minden, and the site of a second battle, which Tacitus fixes at a place called the Idistavisan valley, has been identified by La Bletterie, d'Anville and others, with a place now called Hasten-

bech, near Hameln, east of the Weser. While the great defeat of Varus, a few years before, was close by, as I have said, on the other side of the river, and these sites are in the very heart of Engern. Again, Tacitus unmistakably makes the Angrivarii close neighbours of the Khauki, and tells us how they returned a considerable number of captives, whom they had ransomed from their maritime neighbours ("Annales," II, 15).

On turning to another passage in the "*Germania*," we find him speaking of the *Tracti ruina Kheruskorum et Fosi contermina gens, adversarum rerum ex æquo socii* ("*Germania*," Latham's edition, 129). Both Zeuss and Grimm connect these Fosi with the river Fuse, a tributary of the Aler, which falls into that river at Celle, just on the borders of Engern and Ostfalen, and they were therefore frontages of both the Angrivarii and the Kheruski, the latter being to the south of them. So that we have the Kheruski bounded on the north by the Angrivarii and the Fosi. Now on turning to the map, we find that the southern part of Engern and of Ostfalen, answering to this description, coincides with the mountainous district of Brunswick, and notably with the well known Hartz mountains, the ancient frontier of the Thuringians and Saxons. Hertz or Hartz, or Hart, for all three are forms of one word, means merely wood, or forest, and we have a gau immediately north of the Hertz, which is called Hardago; while further west, but still in this mountain district, and in the gau of Hassia, we have the district of Hersi. These names point to a connection with the etymology of the name Kheruski. Grimm says Kherusk is connected with a sword and a sword god. He tells us that Kheru is the Frank form of the old Saxon heru; the Gothic, hairus, Anglo-Saxon, heoro, Norse hiorr; and he connects it with the Lithuanian kardas, and the Gypsy Kharo, all of which mean a sword. He tells us the termination sk is merely a personal one, and compares mannisks, formed from manna, and thiudisks, from thiuda, and concludes that in Gothic, hairvisks would mean swordly, and would make out that it was derived from a sword god, Hairus; or from the god of war, Ero, or Er, the eponymos of the Heruli. This derivation fits in with Grimm's theory, that the name Saxon is derived from seax, a knife, and that the Saxons are descended from the Kheruski; but as the latter conclusion is entirely mistaken, so I believe is this tempting etymology a very unsound one, and that Kheruski means merely the woodmen, and is as much and no more a proper name than our backwoodsmen. The view of Grimm and his school has been combated with skill and learning in a pamphlet by Mosler, entitled "*De primordis Francorum*," published at Dusseldorf, in 1857. As he says, Ptolemy, who is the only one of the early classic authors who mentions the Saxons,

places them north of the Elbe, and not only so, but he also names the Kheruski as a separate people, and locates the two tribes far asunder. This is absolutely conclusive, for on such a point it would be mere wantonness to reject the testimony of Ptolemy. Nor does the description of the Kheruski at all suit what we know of the Saxons; they were not "*boni æquique*," nor "*inertes ac stulti*," like the Kheruski (*op. cit.*, 12). Mosler adds that according to the laws of etymology, the name Kheruski is connected with hart, hare, haruc, or haruz, wood, as it has been accustomed to connect it, and not from heru, a sword, and the god of swords, as Grimm argues; and with Ledebur, he connects the name with the Harz (*id.*, 13). The name Kheruski, therefore, is an appellative, and not a proper name, and it was, perhaps, not indigenous with the tribe, but given it by its neighbours. The indigenous name was probably Angarii, or Angrivarii, which probably connoted the same people. We thus have the Ostphali and Westphali as outliers of the central kernel of Engern, and a very great probability that a homogeneous race, as there is a homogeneous dialect, occupying the broad area of old Saxony. And it is easy to see how the specific and local name Kheruski, as the name Highlanders, Poloutsi, or Lowlanders, became generic in some writers. Angrivarii and Kheruski and Fosi being merely local designations, and not denoting any differences of race, language, or custom. The name which for the time being was most famous, gave its name to the whole confederacy or bund, and thus we have no difficulty in understanding how the Kheruski are at one time said to have bordered on both the Katti and the Khauki, a statement quite inconsistent with others, if we do not give the name Kheruski a greater extension.

As I have said, Grimm's theory about Saxon being a new name for the old Kheruski, will not hold water at all; but one may go further, not only do the names denote different tribes, but also tribes who are only distantly connected, and which belong to distinct sections of the German race. The following list of Kheruskan chiefs' names has no resemblance to the names of Saxons, Segestes, Segimer, Inguiomer, Actumer, Segumund, Thusnelda, Aritrampius, Thumelic, Sesithac, Flavus, Rhamis, Italicus, Chariomer (Grimm, *op. cit.*, 428). These names have interesting affinities, but they are far other than Saxon. When we come down to Carlovingian times, things are different. We then meet with such names as Egbert, Witikind, Osmund, names which might have been culled from the "*Anglo Saxon Chronicle*," and which are purely Saxon.

Again, the earliest notices of the Saxons in the Roman authors, make them a seafaring people, who attacked not the interior of

Germany, but the coasts of Gaul and of Britain, showing that they could not well have come from the internal parts of North Germany, the old Saxon land; and those who have preserved for us the traditions of the conquest of England by the Saxons, similarly bring them not from old Saxony, but from the country about the Lower Elbe.

If we turn from these to the native traditions of old Saxony, as preserved for us by the monks of Corvey, and to which they gave full credit, as Lappenberg says, we shall find them exceedingly interesting, as illustrating our position. They tell us that Saxons having come to their neighbourhood in ships, and first landing in Hadeln, drove the Thuringians thence by craft and violence. I will quote Lappenberg's commentary on this. He says Wittekind does not inform us whence these Saxons came who landed in Hadeln, and there is no ground for controverting, but, in accordance with other narratives and with the ordinary march of nations from north to south, for supposing that they were from the north shore of the Elbe, or Nordalbingian Saxons, who took possession of the southern shore of that river, and soon spread themselves over those tracts as far as the Weser and the Rhine, until, in the time of Charlemagne, they were in possession of the territory forming the eight bishoprics founded by him, or of the gaus or districts of the later Upper and Lower Saxony and Westphalia. In the account which makes the Saxons to have passed from Britain to Hadeln, a later inversion of the tradition is to be recognised, originating, perhaps, in the return of some bodies of Saxons from England (Lappenberg's "Anglo-Saxons," I, 87 and 88). Again, we find in the heart of Westphalia, near Frekkenhorst, a place called Sassenberg, Latham's "English Language," 66, *i.e.*, the Saxon mountain. Is it probable that such a name would have been given to a site in the midst of an old Saxon country, or does it not rather, like insular names elsewhere, mark a colony of Saxons in the midst of strangers?

All these facts point in the same direction, namely, that the Saxons were not the old indigenes, but a race of invaders, as much invaders in old Saxony as in Britain, except that in the one case they occupied a country peopled by a different race, while in the other, the race was more or less allied. But these *à priori* arguments are reduced to certainty when we examine the question from another side, and apply the method which was first applied so successfully by Kemble, and in later times by Mr. Isaac Taylor, namely, examine the topography of the country. The great distinguishing feature of Saxon topography as we meet with it in England and elsewhere, is the presence of the patronymic ending in *ing*. *Ing* was the usual Anglo-

Saxon patronymic, says Mr. Taylor, and thus we read in the "Anglo-Saxon Chronicle," A.D. 547. Ida was Eopping. Eoppa was Esing. Esa was Inguing. Ingui Angenwiting, *i.e.*, Ida was Eoppa's son, Eoppa was Esa's son, Esa was Ingwy's son, Ingwy Angenwit's son. In fact, the suffix *ing* in the names of persons had very much the same significance as the prefix *Mac* in Scotland, *O* in Ireland, or *Beni* among the Arabs. A whole clan or tribe claiming to be descended from a real or mythic progenitor, or a body of adventurers attaching themselves to the standard of some chief, were thus distinguished by a common patronymic or clan name ("Words and Places," 133). "The Saxon immigration was, doubtless, an immigration of clans, the head of the family built or bought a ship, and embarked on it with his children, his freedmen, and his neighbours, and established a family colony on any shore to which the winds might carry him" (*id.*). "These family settlements are denoted by the syllable *ing*." Now, although this use of the patronymic *ing* is not confined to the Saxons, it is comparatively rare among other German tribes, and seems to have been introduced elsewhere by them or by their relatives. We accordingly find an immense development of names so compounded in England. Kemble mentions 1,329 English names with this root, but Mr. Taylor thinks the total number might be raised to 2,200, as he has noted many omissions in Kemble's lists (*id.*, 132, note 3). With these preliminary remarks, let me draw attention to a passage of Mr. Taylor's, who, arguing from entirely independent premises, and with other objects in view, so singularly confirms the view here argued for. He says: "It has been generally assumed that the original home of the Saxons is to be sought in the modern kingdom of Hanover, between the mouths of the Elbe and the Weser. I have made a careful search in this region for names identical or analogous with those which are found in Saxon England. In Westphalia, a small group of patronymics was discovered (*vide infra*). But, on the whole, the investigation was remarkably barren of results; the names for the most part proving to be of an altogether dissimilar type," &c., &c.

In an appendix, Mr. Taylor gives a list of the small groups of these patronymics which he found in Westphalia and its neighbourhood, which I abstract: Oevinghausen, Erflinghausen, Oelinghausen, Imminghausen, Uninghausen, Eppingkofen, Ebbinghausen, Erringhausen, Assinghausen, Bigginghausen, Bettinghof, Bettinghausen, Böinghausen, Billinghausen, Benninghausen, Berlinghausen, Berninghausen, Beisinghausen, Keddinghausen, Köttinghausen, Kellinghausen, Gellinghausen, Gerlinghausen, Körtlinghausen, Dedinghausen, Dudinghausen,

Frilinghausen, Heddinghausen, Hellinghausen, Hemminghausen, Henninghausen, Heringhausen, Lutringhausen, Leveringhausen, Löllinghausen, Mecklinghausen, Millinghausen, Messinghausen, Nichtinghausen, Puttlingen, Recklinghausen, Röd-
 inghausen, Ratlinghausen, Rielingshausen, Rellinghausen, Siedlinghausen, Weckinghausen, Vellinghausen, Waltringhausen, Wissinghausen, Oestinghausen. These are all the names which Mr. Isaac Taylor could find to compare with the Saxon patronymics of England in the wide country of Nether-Saxony, hardly a tithe of the similar names found in the small district of Artois alone. I have been over Spruner's map of the Saxon gaus, and could add a few more to this list, but only a few. Not only are such names scarce, but they are distributed very sporadically, the greatest number, as might be expected, from the course of migration, being found in the northern portion of Engernand, in Westphalia, but they are a mere handful compared with the crowds of names of an entirely different character, and not only so, but here the patronymic very often occurs not in its virgin form, but corrupted. Eddink, Rikilden, Bodinc, Hadden, &c., even in the old forms on Spruner's maps, while the particles they are compounded with are not the familiar ton and ham of the Saxons, but nearly always the German Husen or Hausen. These facts are conclusive that the Saxons who left these names behind were not the indigenous stock of the country to whom it owes the greater part of its topographical nomenclature, but a race of invaders who planted themselves here and there, like the Danes did afterwards; who became the aristocracy of the country, and gave it its name, and that the people of old Saxony were, in later times, as much entitled to the name of Saxons as the people of Normandy to that of Norsemen, and no more. This conclusion is a valuable one for other reasons than those merely ethnological, and helps to explain some difficulties. Thus, it has always been a puzzle to make out why if the old Saxons and the Saxons of England were, in fact, the same race, how it is that their dialects were so different when we compare the earliest monuments of either? Why, for instance, King Alfred's "Pastoral Care" should be so different to the "Heliand?" Different not merely in the few words which the English Saxon borrowed from the Britons, or from Latin, but also in the forms of many words and phrases entirely Teutonic, and in which the continental Saxon approaches the other German dialects. Thus, Dr. Bosworth, in his very valuable work on the "Origin of German and Scandinavian Languages, &c.," page 75, after having before shown that the Friesic dialects are the most allied to the English form of Saxon, goes on to say, "Low Saxon has all the appearance of German

grafted on an Anglo-Friesic tree. The words are Anglo-Friesic with German vowels, as if the Friesians, in adopting the German, retained the consonants of the old language. This observation may, with still greater propriety, be applied to the syntax and phraseology, that is, to the mental part or soul of the language. They continued to think in Anglo-Friesic forms, while their organs adopted the vowels and some other mechanical parts of the German."

This testimony is not the less valuable because Dr. Bosworth was not writing in support of the view here advocated, but held very different views. He believed the old Saxons and the English Saxons to have been the same race, and speaks of the latter having written and matured their language in England: hence, he says, it differs from the tongue of their continental ancestors (*id.*, 81). In the language of the old Saxons, therefore, we have ample evidence by itself of the ingrafting of the Saxon language proper upon an old indigenous dialect, and a proof that the old Saxons are a mixed race. The linguistic evidence, in fact, points to much the same result as that of the Norman conquest of England, when the language was so greatly modified, only that in the case of the old Saxons it was not the grafting of an entirely foreign tongue, like the Romance of the Normans upon the Teutonic Anglo-Saxon, but that of one German dialect on another.

As yet we have considered only the three divisions of the Saxons south of the Elbe. Let us now cross that river. In doing so, if we enter Holstein we shall be in another old Saxon locality. In Carlovingian times the Elbe divided the Saxons into two great branches, and those to the north of it were called the Nordalbingians or Nord Liudi. Like the Saxons south of the Elbe, they also fell into three divisions, namely, the Thiatmarsgi or Thiedmarsji, the inhabitants of Ditmarsh, the Holsati, Holzati or Holsatas, from whom the present Duchy of Holstein takes its name, and the Stormarii or people of Stormar, of whom Hamburg was the capital (Latham's "English Language," 33). It has been very generally supposed that in these Nord Albingian Saxons we have undoubted descendants of the same ancestors as our English Saxons. I believe this to be an entirely mistaken view, and that these Saxons north of the Elbe were as much, and no more, Saxons than those of old Saxony, that they were in fact a colony from the south. This appears from several considerations. In the first place the language is the same. Here as in old Saxony we have Platt Deutsch spoken, and not Saxon proper; and in fact the purest Platt Deutsch is spoken in Holstein and Schleswig. Secondly, the topographical evidence adduced from Mr. Isaac Taylor as to the distribution

Saxon patronymics in old Saxony south of the Elbe, applies equally to Holstein, where we have an equal scarcity of names compounded with Saxon patronymics amidst a profusion of foreign and distinct forms. Thirdly, the three names, Holsati, Dietmarsi, and Stormarii, are clearly new names in this district, and are not found in the classical authors, where the tribal nomenclature of the Danish isthmus is given in some detail. Again, the name Transalbingian applied to this section of the Saxons, is clearly the name of a separated fragment of a colony who have gone beyond the river, and is not a substantive appellation like an old settled tribe would possess. Again, we have in the north central part of Engern a gau called Sturmia, and another running along the left bank of the Weser called Steoringa, the former of which at least points to the mother country of the Sturmarii. The name Holsati or Holtsati simply means the settlers in the wood. Now this term *satas* or *settas* is an interesting one, as it generally marks elsewhere a frontier, an abandoned district, or else a conquered one on the borders of the enemy or the wilderness, and implies an immigration. Thus we have in England and along the Marches of the west the several names *Dorsætas*, *Defnscetas*, *Somersætas*, *Magasætas*, and *Scrobsætas*, the last marking the colonization of a district only conquered in the days of the Mercian hero Offa. On the borders of France we have the *Alsætas* in Alsace. While close to the very district we are now examining we have in North Engern a gau called *Waldsati*; and this last a very interesting case, for it apparently marks an encroachment made upon the old land of the *Khauki*. *Thiatmarsgoi*, *i.e.*, the dwellers in the gau of *Thiatmars*, the modern *Dithmarsh*, also bore a name not known to the classical authors.

That the old Saxons pushed themselves northwards as well as southwards, and thrust out the Friesian *Khauki* we have every reason to believe; the *Khauki* are put on either bank of the Weser and as far as the Elbe by the classical authors. They have been classed as Friesians by the best authors, and the buttress of old Saxons, which now separates the South Friesians from the North Friesians, was probably not there in early times, when I believe the Friesian area was continuous. Thus Dr. Latham, who is almost fanatically opposed to postulating any race-changes, says, "The evidence of the North Friesian having once been continuous with the Friesian of Friesland and Westphalia is satisfactory, the displacement of it having taken place within the historical period, and its history is to be found in that of East Friesland, Oldenburgh, Delmenhorst, and Bremen" ("Germania," 125). Again, he tells us that Friesian was spoken within the historic period in *Eydersted* and *Ditmarsh* (*id.* 124).

Whatever evidence we take, therefore, we arrive at the same conclusion, namely, that the Saxons north of the Elbe, or the Holsteiners, as we may rather call them, are not descended from the Saxons proper, but are a colony from Nether-Saxony, a colony of the same mixed race which peopled that area, and in no sense indigenes of the district where they are now found.

If I am asked where then are the descendants of the real old Saxons, I can only answer by a similar question, where are the descendants of the Lombards, of the Burgundians, of the Warini, and of the Goths? They are not to be found in their old land at all, but scattered far and wide over Europe. They migrated bodily from their old homes, and their old homes were left waste like Anglen was, which, in the words of Bede, "*De eo tempore (i.e., from the migration of the Angli) usque hodie manere desertus inter provincias Jutarum et Saxonum perhibetur.*" It was over these waste and deserted lands that the Slaves spread from the east, and the so-called old Saxons from the west. In limiting the Saxon element among the old Saxons to its upper caste and to the descendants of its conquerors, we clear away a great deal of difficulty and confusion, and we prepare ourselves to attack the problems which are connected with the ethnology of the early German races with greater effect. In another paper I hope to trace the migration of the Saxons proper in detail.

In the discussion which took place on the above—

DISCUSSION.

MR. HYDE CLARKE congratulated the Institute that the subject of the Germanic race was being investigated with such labour and research by one who had formerly bestowed care and thought upon it. He was not, however, prepared to concur with the suggestion that the Saxons went from the south to the north. It was there was the great seat of the Suevi of Tacitus, that important division instituted by that author in the Germanic race, and which had not been sufficiently regarded. Mr. Clarke would rather look to the distinction of Suevi, than to the separate tribes as they were considered, but in reality military and political confederations of Suevi more or less permanent. English and Warings (*Angli et Varini*), Frisians, Saxons, Langobards, Burgundians, Goths, Rugians (? the Russian Warings of Nestor) really consisted of the same people and families. The pursuit of the subject as furnished by Mr. Howorth would bring him to this point. Mr. Clarke had in his paper, published in the "*Transactions of the Ethnological Society* (25th Feb., 1868) and the Institute," dealt with the history which he had discovered and established of the Warings, that remarkable people conjoined with the English (*Angli et Varini*). Mr. Howorth would have to recount the confirmation of the laws

of the Angli et Werrini by Charlemagne. With regard to the Frisians and their share in these migrations, Mr. Clarke would refer to his paper read on the 15th February, 1849, before the Society of Antiquaries, in rectification of the 15th chapter of the first book of Bede's "Ecclesiastical History," and of the 9th chapter of the fifth book. The Hunni of Bede were the Hunsing, one of the chief branches of the Frisians, and the Rugii were also referred to. The statement about Jutland remaining waste was also corrected. With regard to Ing he did not consider it as distinctively Saxon or as simply tribal. He had defined it as the English collective, or collective capable of admitting a singular or plural form, which was preserved to this day by the working-classes, though it had passed unrecognised by the grammarians. In considering the subject of the Suevian migrations, and particularly in reference to Britain, two routes were to be examined, one across the North Sea to Kent, the East Saxons, the East English, Bernicia and Deira, and one by Nether-Saxony and Flanders to the South Saxons, Wight, the West Saxons, and perhaps to the middle Saxons, and to Mercia.

The President made some remarks, and the meeting then separated.

JANUARY 9TH, 1877.

Colonel A. LANE FOX, F.R.S., *President, in the Chair.*

The minutes of the previous meeting were read and confirmed.

The following new member was announced: Rev. A. C. GEEKIE, of Bathurst, New South Wales.

The following presents were announced, and thanks were ordered to be returned to the respective donors for the same:

FOR THE LIBRARY.

From the SOCIETY.—Bulletin de la Société d'Anthropologie de Paris. Vol. XI, No. 3.

From the SOCIETY.—Proceedings of the Society of Antiquaries of London. Vol. VII, No. 1.

From the SOCIETY.—Bulletin de la Société Impériale des Naturalistes de Moscow. No. 2. 1876.

From the ACADEMY.—Bibliographische Berichte über die publicationen der Akademie der Wissenschaften.

From the SOCIETY.—Proceedings of the Royal Society. Vol. XXV, No. 175.

From the SOCIETY OF ARTS AND SCIENCES, BATAVIA.—Tijdschrift.

XXIII. *aff.* 2, 3, 4; *Notulen* XIII, 1875, Nos. 3, 4; XIV, 1876, No. 1; *Kauro Oorkonden*, 1 met platen en omslag. By Dr. A. B. Cohen Stuart.

From the ACADEMY.—*Bulletin de l'Académie Impériale des Sciences de St. Petersburg.* Vol. XXII, No. 3.

From the ASSOCIATION.—*Proceedings of the Geologists' Association.* Vol. IV, No. 9.

From the AUTHOR.—Notes on Shakspeare and Memorials of the Urban Club. By John Jeremiah, Junr.

From the EDITOR.—*Revue Scientifique.* Nos. 25–28.

From the EDITOR.—*Nature* (to date).

Mr. Henry Hyde Clarke, F.G.S., exhibited a feather dress and ornaments from the Amazon.

Mr. H. N. Moseley, Naturalist to the Challenger Expedition, then read the following paper on the Admiralty Islands:

On the INHABITANTS of the ADMIRALTY ISLANDS, &c. By H. N. MOSELEY, Fellow of Exeter College, Oxford, late Naturalist on board H.M.S. "Challenger." With Plates xx, xxi, xxii, xxiii.

THE Admiralty Islands are a group consisting of one large island and numerous small ones. The group lies between latitudes $1^{\circ} 50'$ and $3^{\circ} 10'$ S., and longitudes 146° and 148° E. It forms the north-westerly termination of the long curved chain of large islands and groups of islands which stretching roughly N.E. and S.W., is composed of the New Ireland, Solomon, and New Hebrides groups. The main island of the Admiralty group is distant from New Hanover, the nearest large island of the chain, about 130 miles, and from the nearest point of New Guinea about 150 miles. The main island is oblong in form, and is about 50 miles in extreme length and 16 in extreme breadth. The area of the entire group is about 550 square miles, *i.e.*, about twice the size of the Isle of Man and three times that of Middlesex. The main island is mostly of small elevation, but contains mountains rising to a height of about 1,600 feet, which were visible to the eastward of the anchorage of the "Challenger," in Nares anchorage. The examination of the islands made by the Expedition was confined to the extreme north-western portion of the northern coast of the main island in the neighbourhood of Nares Bay, and to the numerous small outlying islands, which, lying just off the coast, shelter that anchorage.

The land surface in the vicinity of Nares Bay consists of a series of low irregular ridges rising one above another, with wide flat expanses at the heads of the bays on the coast, which are

scarcely or not at all raised above the sea level, and are thus in a swampy condition. The mountains appear from their form to be volcanic, and it is probable that the obsidian used by the natives for their implements comes from them. A trachytic lava was found to compose one of the outlying islands, and a similar rock was observed on the mainland where it begins to rise. A platform of coral sand rock forms the coast line of the main island in many places, and a similar rock is the only component of most of the small outlying islands on which the greater part of the natives dwell. The Admiralty Islands from their position with regard to the equator have an extremely damp climate. They are densely wooded.*

Zoology of the group.—A few remarks on the animals of the islands may not be out of place. Besides the pig and the dog there are of mammalia, two species of fruit bats (*Pteropinæ*), and an opossum (*Cuscus*). A dugong and a dolphin are also killed by the natives.

Of birds the most abundant are the fruit pigeons (*Carpophaga oceanica*), which feed upon the wild coffee and nutmegs, and roost in vast numbers upon one of the small outlying islands. We saw or procured about 28 other species of birds, including an eagle, a lory, a kingfisher, &c., most of which appear nearly allied to or identical with those of the Echiquier Islands.† Small tree swallows (*Collocalia*) fly about amongst the cocoanut trees, and all day flocks of terns and noddies (*Sterna lunata*, *Anous*), follow in the still waters within the reefs the shoals of skip-jacks (*Caranx*) as they pursue the smaller fish. The shores are inhabited by several species of shore birds. Of reptiles there are two species of turtle common here, *chelone midas*, and *imbricata*, the latter the source of the principal article of barter of the natives, tortoise shell. In the swamp pools is a species of crocodile, of which the natives are in great dread. There are also at least one species of land and one of sea snakes (*Hydrophidæ*), and the natives showed themselves acquainted with the danger of handling snakes. A gecko and blue tailed lizard (*Euprepes cyanura*) are also present and abundant.

Literature relating to the Admiralty Islands.—An Account of a Voyage round the World in the years 1766, '67, '68, '69. By Philip Carteret, Esq., Commander of H.M. Sloop "Swallow." Hawkesworth's Voyages. London, 1773. Vol. I.

Labillardiere, Relation du Voyage à la Recherche de "La Perouse." 1791. Paris, an. VIII. T. I, p. 255.

* For an account of the vegetation of the island, see a paper by the author on the subject in Journ. Linn. Soc. Botany. Vol. XV, p. 73.

† An account of the birds of this group is published in Proc. Zool. Soc., 1867, p. 828. Hartlaub. On a Collection of Birds from some less known localities of the Western Pacific.

The above translated by John Stockdale. London, 1800. Vol. I, p. 296.

Voyage de Dentrecasteaux à la Recherche de "La Perouse." Rédigé par M. de Rossel. T. I, p. 131.

Extracts from the above are to be found in general works, such as Waitz' *Anthropologie*, Meinike' *Die Inseln des Stillen Ocean*, &c.

History of the Islands.—The Admiralty Islands were discovered by Captain Philip Carteret, of H. M. sloop "Swallow," on September 14, 1767. Captain Carteret lay off small outlying islands to the south of the group. Twelve or fourteen canoes came off, and the natives at once attacked him by throwing their lances into the midst of his crew. He had to fire on them, and although he made efforts to conciliate them these were entirely unsuccessful. From a statement made by Dentrecasteaux it appears that shortly before 1790 the Islands were visited by a frigate commanded by Captain Morelle.

In 1791 the "Recherche" and "Esperance" sailed from France, under the command of Dentrecasteaux, to search for the missing "La Perouse," the "Recherche" having on board of her as one of the naturalists M. Labillardiere.

In the previous year, 1790, the English frigate "Syrius" was wrecked on Norfolk Island, and a Dutch vessel which conveyed her commander, Commodore Hunter, to Batavia, passed by the Admiralty Islands. Whilst she was in sight of the shore, canoes full of natives put off towards the ship, and showed a desire to communicate, and being indistinctly seen in the distance their white shell ornaments seen on their dark skins were taken for white facings on French naval uniforms, and their reddened bark cloths for European fabrics, and Hunter was persuaded that here were relics of the unfortunate "La Perouse."

Dentrecasteaux received information at the Cape of Good Hope by a special despatch vessel sent for the purpose from the Isle of France, of what Commodore Hunter had seen, and he in consequence visited the Admiralty Islands with his two ships, arriving off the Islands in July, 1792. He visited the outlying islands of Jesus Maria and La Vandola lying to the eastward, and then coasted along the northern shore of the main island to the same spot as that visited by the "Challenger." He communicated with the natives by bartering with them from his ships and from boats, but seeing no trace of any European relics amongst them, he concluded that Commodore Hunter had been mistaken in the manner already described, and set sail without effecting a landing. Two separate accounts were published of Dentrecasteaux's cruise, one by himself, edited by Mr. Rossel,

the other by M. Labillardiere. Both contain very interesting information concerning the Admiralty Islanders, the account by Labillardiere being most complete in this respect, and accompanied by large plates of natives and weapons, and a view of Dentrecasteaux Island. These accounts will be referred to in the sequel.

No European appears to have landed in the Admiralty Islands before the visit of the "Challenger" Expedition, which extended from March 3 to 10, 1875.

Anthropology of the islands.—In treating of the characteristics of the Admiralty Islanders, the information will be classified under the series of headings adopted in Waitz's "Anthropologie."

Domestic animals.—The only domestic animals possessed by the natives of the Admiralty Islands in any abundance are pigs. These are partly kept in enclosures around the houses, partly run half wild over the inhabited islands. The pigs are small, lean, and black coloured, and appear never to develop large tusks. No ornaments of large pigs' tusks were seen in the possession of the natives. If therefore, as I believe, from signs made by the natives, is the case, there are wild pigs on the main island of the group, they must be unlike the Papuan pigs in this respect, and resemble more the New Hebrides breeds. Two dogs were seen on Wild Island. I saw one of these a puppy. It was white, smooth haired, like a fox terrier in appearance, and very like a dog which was in the possession of the natives at Humboldt Bay. No dogs but these two were seen amongst the natives. No rats were seen on any of the islands. No fowls were seen in the possession of the natives, but I obtained a plume of cock's feathers worn as a head-dress from one native. Fowls must therefore exist in the islands somewhere, but are probably scarce, as only this one plume was seen.

Physical characteristics.—The following measurements were taken :—

Measurements in Inches of Natives of the Admiralty Islands, taken by the late E. Von Willemoes Suhm, being of Wild Island, except 6, 7, 8, 9, taken on board the ship by Von Suhm and H. N. Moseley.

Height.	Breadth.	Arm, length.	Leg, length.	Foot, length.	Hand, length.	Nose, length.	Forehead, length.	Ear, length.	Breasts, length.	Penis, length.	Weight in lbs.
1. Old woman, 40 years ca. ..	15	28	..	10	7	..	..	..	7		
2. Young girl, 15 years ca. ..	15	25	33	9½	..	1½	..	2½			
3. Older women of mean size ..	12	25	..	9	6½	2	3	..	6½		
4. Old female ..	..	..	..	10	8	..	..	..
Mean ..	14	26	33	9½	7½	2	3	2½	6½		
1. Young man ..	67	16	37	9½	7	2	2	2½	2½		122
2. Adult ..	63	18	35	10½	7	2½	3	2½	3½		133
3. Adult ..	63	17½	34	9½	..	2	..	2½		3	126
4. Adult ..	66	17½	..	..	..	..	..	2½		..	127
5. Oto ..	67	17½	..	..	..	..	..	..
6. Adult ..	64½	..	..	9½	..	..	..	..
7. Adult ..	63	..	33½	10½	8	1½	3	3			
8. Adult ..	62½	17½	27½	10	7½	2	3½	..			
9. Young ..	66½	16	34	10	7½	2	3½	..			
(photographed) ..											
Mean ..	64½	17½	34½	9½	7½	2	3	3			

Further measurements of numbers 8 and 9. 8. Girth of chest with arms held up, 36. 9. Girth of chest, 33. Breadth of foot just behind origin of toes, $4\frac{1}{2}$. Girth at umbilicus, 30. Round buttocks, 34.

Two heights of adult men taken by me, 68 and $60\frac{1}{2}$.

The measurements of the legs were taken from the great trochanter of the femur to the sole of the foot. Those of the breadth from tip to tip of clavicles. Those of the hand from the inner margin of the palm to the tips of the middle finger. Those of the forehead from the root of the nose to the commencement of the hair. The chest girth measurements were taken with the arms upheld.

Average specimens were selected by von W. Suhm as far as possible. The mean height of the men, as will be seen from the table, is about 5 feet 5 inches. Whilst the tallest man measured was 5 ft. 8 inches, and an unusually short one only a fraction over 5 feet. The mean height of the women is 5 ft. 1 inch.

It is difficult, and possibly of little value, to compare the measurements here obtained with those given in the Anthropological part of the Novara publications, Vol. III, since the methods of measurement differ widely. I have, however, by adding together the lengths there given separately for fingers, hand, forearm and arm, and treating this as the length of the arm obtained, the ratio of the length of the body to the length of the arm in several races, and compared it with the similar ratios in the case of the Admiralty Islanders, using the averages of the measurements where available. The results are shown in the following table:—

				Measurements in millimetres.		
				Height.	Length of Arm.	Ratio of height to length of Arm.
New Zealanders, men	..	..	..	1757	859	2·04
Australian men	..	..	..	1675	819	2·04
Australian women	..	..	..	1596	770	2·07
Tahitian women	..	..	..	1614	772	2·09
German men	..	..	..	1680	789	2·1
German women	..	..	..	1544	713	2·1
Admiralty Island men	..	..	..	1646	711	2·30
Admiralty Island women	..	..	..	1549	660	2·30

Whence it appears that the Admiralty Islanders are short armed.

The race is of average height, but the weight is, as usual with savages, below that of Europeans, 126 lbs. (nine stone) as com-

pared with 150 lbs., about the weight of an average Englishman.

The natives contrasted at first glance with the Papuans of Humboldt Bay in being far thinner and lankier. I saw but one native that was at all fleshy, although such were not uncommon at Humboldt Bay.

The usual colour of the natives is a black-brown, often very dark, and darker than that of the Papuans of Humboldt Bay. The young girls and young boys appear much lighter as a rule than the adults. Some one or two of the younger women were of a quite light yellowish-brown, as was also one young man, who came from a distance to the ship to trade. I saw no old women who were light coloured.

The arms and legs of the men are covered with a short sparse curly black hair, which appears as if growing in separate locks,* exactly as in the Humboldt Bay natives. Hair is rarely present in any quantity on the back or chest, but in a few exceptionally hairy examples it was well marked.

The hair of the head, which is worn long only by the younger adult males, formed in them a dense mop, projecting in all directions 6 to 8 inches from the head. It appeared less luxuriant in growth than that of the Papuans of Humboldt Bay.

The hair is crisp, glossy, and extremely elastic, and every hair rolls itself up into a spiral of small diameter.

In general appearance thus it is fine curly, like that of Fijians. On comparing it with a very small sample of hair of the natives of Humboldt Bay taken from several native combs, the Papuan hair proves to be somewhat coarser, but in other respects the two hairs are closely alike, the diameters of the spirals of the curls being the same. Some hair from a native of Api, New Hebrides, is of about the same coarseness as the Admiralty Island hair, but the curls are of much smaller diameter. The hair of the Api Islanders seems to be remarkable for the fineness of its curls. In Tongan hair the curls are of far larger diameter than those of the Papuan or Admiralty Island hair.

The fineness of the curl of the hair in various Polynesian and Papuan races which I have seen, seems to be pretty constant in each race and characteristic. It might be estimated by measuring the diameter of the circles formed by the separate spirally twisted hairs, and taking the average of several measurements. No doubt a certain curve of the hair follicles corre-

* This appearance is probably merely due to the tendency of the hairs evenly distributed at their bases to collect together and combine into curls, and must not be taken to imply necessarily the existence of a condensation or aggregation of hair follicles at certain spots producing hair growing in separate locks, which condition was formerly erroneously supposed to occur on the scalps of Papuans. The body hairs form small curly locks in other races.

sponds with and produces the curl in the hairs, as in the case of the hair follicles of the negro as discovered by Mr. Stewart.* But the amount of curve will be peculiar to each race. The hair of both head and body of the Admiralty Islanders is naturally black, that of the head being of a glossy black.

A very slight trace of whiskers is present in most of the men as a small black streak on the very upper part of the cheek, looking like a continuation of the hair of the crown almost. Regular bushy whiskers were seen only in the case of one man, who had a continuous frill round his face, formed of conjoined whiskers and beard. This man was also remarkable for the greater hairiness of his body, hence I imagine that whiskers and hair generally on the face are exceptional, and not removed by shaving. One or two men had short pointed beards without whiskers.

Eye brows were generally absent, very probably shaved off (the natives made signs when offered razors, that they used obsidian knives for shaving). I saw eyelashes long and well developed in some youths.

The eyes are not in the least oblique, and open full and widely. The iris is of a dark brown. The forehead is somewhat flattened. There is usually a well marked depression at the origin of the nose, the brow thus overhanging somewhat. The cheek bones are prominent, the face diminishing rapidly beneath them, to terminate in the straight fronted chin. The nose is usually short, with wide alæ and flattened tip. The nostrils are not patent in the adults, or only just to be seen into under the alæ.

In the children the noses are more flattened, and the nostrils somewhat more patent. The septum nasi in all the adults is perforated, and the lower margin of the perforation usually dragged down by the suspension of ornaments, so that in a profile view of the face the large aperture in the septum is looked through by the observer.

Some of the natives, as at Humboldt Bay, have most remarkable long Jewish noses. About 1 in every 15 or 20 has such a nose. I at first imagined that this form of nose was produced to some extent by long action of excessively heavy nose ornaments, but I saw one youth of only 16 or 17 with such a nose very fully developed, and I saw more than one woman with a well marked arched nose with dependent tip, and the women appear to wear no nose ornaments. An incomplete mixture of two races may possibly exist here, but unfortunately I did not carefully observe with this view whether the natives with Jewish

* Charles Stewart, M.R.C.S., F.L.S.; note on the scalp of a negro. "*Microscopical Journal*," 1873, p. 54.

noses showed other points in common in which they differed from the remainder of the population. One of the most marked instances of these peculiar features was that of the head man or chief of Wild Island (Oto).

The lips are of a light brown, very slightly pinkish. They are usually very little prominent, and are not unusually large. The chins are usually straight in front, not rounded, and not prominent, sometimes apparently receding. The jaws are wide. The lower line of the jaws is remarkably straight and horizontal. The lobes of the ears are enlarged and dragged into a long loop by the weight of suspended ornaments. The penis is usually of moderate size. I saw only one man who had a remarkably large one.

Some few of the women were large and stout. One woman that I saw must have been 5 ft. 6 in. in height, but such women were exceptional.

Drawings of the heads of three natives are given, enlarged from photographs in Pl. xxiii, figs. 1, 2, 3.

Variability.—The occurrence of Jewish noses in a certain number of the Admiralty Islanders has already been described. As another instance of variability, I may state that I saw one boy on Wild Island who, though in other respects just like the rest, had his hair quite straight. Light coloured skins were rare, but I saw one man and two women whose skins was of a light yellow colour.

The language of the Admiralty Islanders.—The language of the Admiralty Islanders has been hitherto entirely unknown, and I believe that the short list of about 55 words, besides the numerals, obtained by me, represents all the information at present existing on the subject.

I was continuously engaged in botanical collection during the short stay of the "Challenger" at the islands, and was only able to pick up a few words now and then in the intervals of my other work.

The difficulty of obtaining correct vocabularies from savages, of whose language the investigator is entirely ignorant, is well known, and has been commented on by many writers on anthropology and philology. I was well aware of these difficulties, and I used great caution, and believe that the words which I obtained are mostly correct. The words were all carefully written out before comparison was made between them and vocabularies of other languages, or with one another; and various proofs of their correctness were found when the comparisons were instituted, such as the close similarity of certain words to words in other languages having a similar meaning, and the curious formation of the numerals to be presently described,

all of which were not known or noticed at the time the words were taken down.

I met with the following difficulties with the Admiralty Islanders in obtaining words from them. The natives seemed always ready enough to give the names of particular birds which had been shot, as of two kinds of pigeons and a parrot, or of a cuscus, hermit crab, or any such object which they considered was strange and novel to the inquirer, and one for which he wished to learn a name; but immediately they were asked for the word for the nose, or arm, or any such object common to the inquirer and themselves, they seemed to grow puzzled and suspicious, and to wonder why one could want to know the name of a thing for which one must have a name already. Some men were suspicious from the first, and refused sullenly to give any words at all, and prevented others from giving any. Some would give one or two only, and then refuse further information, whilst I came across two who gave me at least ten words each, quickly one after another, but then, like the rest, failed me. Several of the words I was able to test the correctness of by using them with success to the natives in inquiring, *e.g.*, for human skulls and those of turtle, &c., and offering "one skull one hatchet," sip batu hama sip samil. The words are given in the table, written on the phonetic system, according to the method now generally adopted for expressing Polynesian languages. Some difficulty was found in expressing certain sounds, and especially a sound which seemed to lie between a and o. I wrote down the word for head (batu), whilst my lamented colleague, R. von Willemoes Suhm, wrote it down as botu, and I could not make up my mind as to which way of writing the word was more correct, although I heard it used very frequently.

The following is a list of the words obtained, to which is appended a list of the proper names of a canoe crew which were taken down by Mr. R. Richards, paymaster of the "Challenger," and by him kindly given to me.

Words of the Language of the Admiralty Islands, collected mostly on Dentrecasteaux Island, but partly also on Wild Island.

Numerals.	1 Sip.	10 Sangop. (The hands held with the fingers pointed forwards, and closed side by side, are clapped once when sangop is used.)
	2 Huap.	
	3 Taro.	
	4 Vavu.	
	5 Lima.	
	6 Wono.	11 Sangop sip.
	7 Hetarop.	12 Sangop huap.
	8 Anda huap.	20 Hungop.
	9 Anda sip.	30 Turongop. (So taken down. Tarongop ?)

At the use of hungop the hands are clapped twice; at turon-gop, thrice. Reckoning after 10 is transferred from the fingers to the toes. I saw this done for 11 and 12; probably it is extended to 20.*

Yes	u.
It is or is	ara.
Carpophaga oceanica	ban.
Dove Ptilinopus	u, from the call of the bird.
Parroquet Trichoglossus	sibbi.
Hermit crab, Cænobita	mwam.
Turtle	bue.
Pig	po.
Cuscus	gohai.
Fish, a caranx, also a selachian	uke, probably a general term = fish.
Applied to the skull of a fish hung up	niharu, probably the name of this fish.
Woman	bibi.
Man	hama, inferred from botu hama.
Boy	naru.
Head	botu, or batu, or between the two.
Hair of head	langam pui?
Ear	darinya.
Nose	noa.
Eye	manna.
Teeth	luvo.
Tongue	arimè.
Belly	lau.
Arm	bui } limb?
Leg	bui }
Penis	piem.
Human skull	batu hama = head of a man.
Pig's skull	batu po.
Turtle's skull	batu bue.
Tortoise shell	bue bu.
Tortoise shell	another term, valus.
To eat	huyan?
Tree	kau.
Cocconut tree	niu. I think also all palms. It was applied to the Areca palm.
Pandanus	muoi.
Artocarpus sp.	un.
Edible Colocasia	lor. Applied to the plant growing in an enclosure.
"	mwa. Applied to the roots brought off for sale.
Sago (prepared)	abi.
Plantain Musa	mborru, pronounced with vibration of the lips. I could not properly catch the sound.

* The idea of counting on the feet as well as the hands still survives in Great Britain. An Irish car-driver in Co. Mayo, last autumn, used the expression to me, "as many times as I could count on my fingers and toes" for a score. The use of the toes in counting is apt to seem extraordinary to civilized Europeans who constantly wear boots and shoes and sit on chairs. The majority of mankind who squat on the floor or ground and have their toes generally exposed, and from their posture near to their hands, naturally pass to the toes in counting after having exhausted the hands.

Betel pepper. Chavica betel..	..	mbung.
Sugar cane .. ..	..	bowai.
Hippopus shell .. ..	..	puke.
Beads .. ..	..	bujam.
Fish net .. ..	..	pu.
Stockade .. ..	..	manu?
Drum (large wooden)..	..	dan.
Armlet of trochus .. ..	..	lan.
Large earthen pot .. ..	..	oo?
Native cloth. A narrow strip of bark cloth worn as T bandage.	..	orlau.
Hatchet .. ..	..	samil.
Iron .. ..	..	} laban.
Oxide of manganese .. ..	..

Laban is the term given to the peroxide of manganese, which the natives use to blacken their bodies, and has evidently been transferred to iron, because of the metallic lustre and weight of both bodies.

Canoe .. ..	..	doan.
Paddle .. ..	..	baban.
Water .. ..	..	wai.
Lime used in betel chewing ..	..	wav.
Chief .. ..	..	Oto?

This term was applied to an apparently head man at two separate islands: Dentreca-teaux and Wild Islands.

Land snail .. ..	..	masin.
Crocodile .. ..	..	saluan.

About 68 words.

Names of the Men forming the Crew of a Wild Island Canoe, Admiralty Islands.

Taken down by Mr. R. Richards, Paymaster, R.N.

The Chief of Wild Island ..	Oto.
His sons	{ Susu. Shibaya. Yare. Heve. Pomoi. Banawayi. Babaiu. Balusu. Babaru.

Remarks on the foregoing Vocabularies.—The system of notation is a decimal one. With regard to the numerals, it will be seen that whilst the earlier numbers up to 5 correspond to some degree with the Malayo-Polynesian forms, and that the word for 5 is the almost ubiquitous lima (hand); the higher numerals are peculiar, and the terms for 8 and 9 are formed by subtraction

from 10, 8 being 10 - 2, and 9, 10 - 1. Anda huap is 8, huap meaning 2; and anda sip is 9, sip meaning 1. Hence anda must mean less or minus.

The plan of making numerals by subtraction is well known as existing amongst several races. Mr. Tyler, in his "Primitive Culture," cites the instances of some North American races, and of the Ainos of Yesso, where the words for 8 and 9 obviously mean 10 - 2, and 10 - 1.*

The following are the Aino numerals, which I have extracted from Langsdorff's travels, those only being given which show the subtractive method of formation of the numerals 8 and 9.

Numerals of the Ainu.

Numerals.	Ainu of Kamschatka.	Ainu of the Kurile Islands.	Ainu of Jesso.	Ainu of Gwait of Tschoka.
1	ssinep.	ssyhnāp.	schinep.	schineni schnepf.
2	tuup.	dūph.	toopu.	toni tup.
8	tubis.	dūhpyhs.	tobishchanbe.	tobishchanbi. tubischambi.
9	ssinepis.	ssyhnaphys.	schnipischchanbe.	schinpischanbi. schnebischanbi.
10	uupis.	ūpyhs.	wanak.	wambe. wambi.

Numeral 7 shows no subtractive form.†

I have not been able to refer to Prof. Pott's paper on the art of counting, cited by Mr. Tyler,‡ so that I do not know how wide may be the range of this peculiar expedient in the formation of numerals;§ but it does not exist in any Polynesian language, as far as I have been able to ascertain from examination of numerous vocabularies;|| and Mr. Tyler gives the Polynesian formulæ for numbers above 5 as 5.1, 5.2, 5.3, 5.4.¶ In the Melanesian languages, to which class the language of the Admi-

* "Primitive Culture." E. B. Tyler, F.R.S. London, J. Murray, Vol. I, p. 269.

† "Voyages and Travels in various parts of the World during the Years 1803, 1804, &c.," by G. H. Von Langsdorff. London, H. Colburn, 1813, p. 361. Specimen of the languages of the Ainu.

‡ "Die Quinäre und vigesimale Zählmethode bei Völkern aller Welttheile." Halle, 1847. Supplemented in Festgabe zur XXV Versammlung Deutscher Philologen, &c., in Halle, 1867.

§ In the dialect used in the central group of the Nicobar Islands, where 1 is hayang and 9 hayang hata, it is probable that the name for 9 is subtractive, but that for 8 is obviously not so formed. "Voyage of the 'Novara.'" Scherzer, English translation. Vol. III, Appendix A.

|| Unless possibly at Ebon Ralik Islands. See Turner's Tables of Languages in "Nineteen Years in Polynesia." London, 1861.

¶ Tyler, *l.c.*, p. 261.

rality Islanders might be expected to conform, the higher numerals are formed, as 2nd 1, 2nd 2, 2nd 3, &c. And I can find no trace in any of them, as given in Von der Gablentz' treatise on the Melanesian languages, of any other method of formation.* Neither does this method occur in any of the 33 languages of the Malay Archipelago given by Mr. Wallace, except possibly in the case of the Sula Islands (No. 20 on the list in Wallace, Malay Archipelago). There is lastly no trace of such formation in the Louisiade or Papuan languages, as far as I have had access to vocabularies.† Thus the language of the Admiralty Islanders would stand alone amongst all surrounding races, were it not that in one island, in Micronesia Yap, in the Carolines, an exactly similar formation of numerals occurs, the subtractive formation being in this instance, extended to the numeral 7, as well as 8 and 9.

The following are the numerals of Yap, taken from the latest source of information:—‡

1. Darip.
2. Lakrue.
3. Odelipp.
4. Enninck ningk.
5. Ellall.
6. Ennill.
7. Medelipp.
8. Meruk.
9. Meripp.
10. Erregak.

It will be seen that the numerals are very different from those of the Admiralty Islands, although the method of formation is the same, and I should not lay stress on the resemblance were not there other connections between the languages. It is a remarkable fact that the language of Yap is distinct from that of all other Micronesian languages, except that of the island of Ngoli, colonized from it.§ And apparently it is the only Micro-

* "Die Melanesischen Sprachen." H. C. von der Gablentz. Abhn. der K. Sachsichen, Gessell der Wiss, 1861.

† "Voyage of the 'Rattlesnake.'" McGillivray.

"Voyage of the 'Fly,'" Vol. II, Appendix.—R. G. Latham, on the General Affinities of the Languages of the Oceanic Blacks.

‡ "Ein Beitrag zu der Kenntniss der Sprachen auf Mindonao, &c." Dr. A. B. Meyer, "Tidschr voor Indische Taal Land en Volkenkunde." X Deel, 1873. Batavia, p. 441.

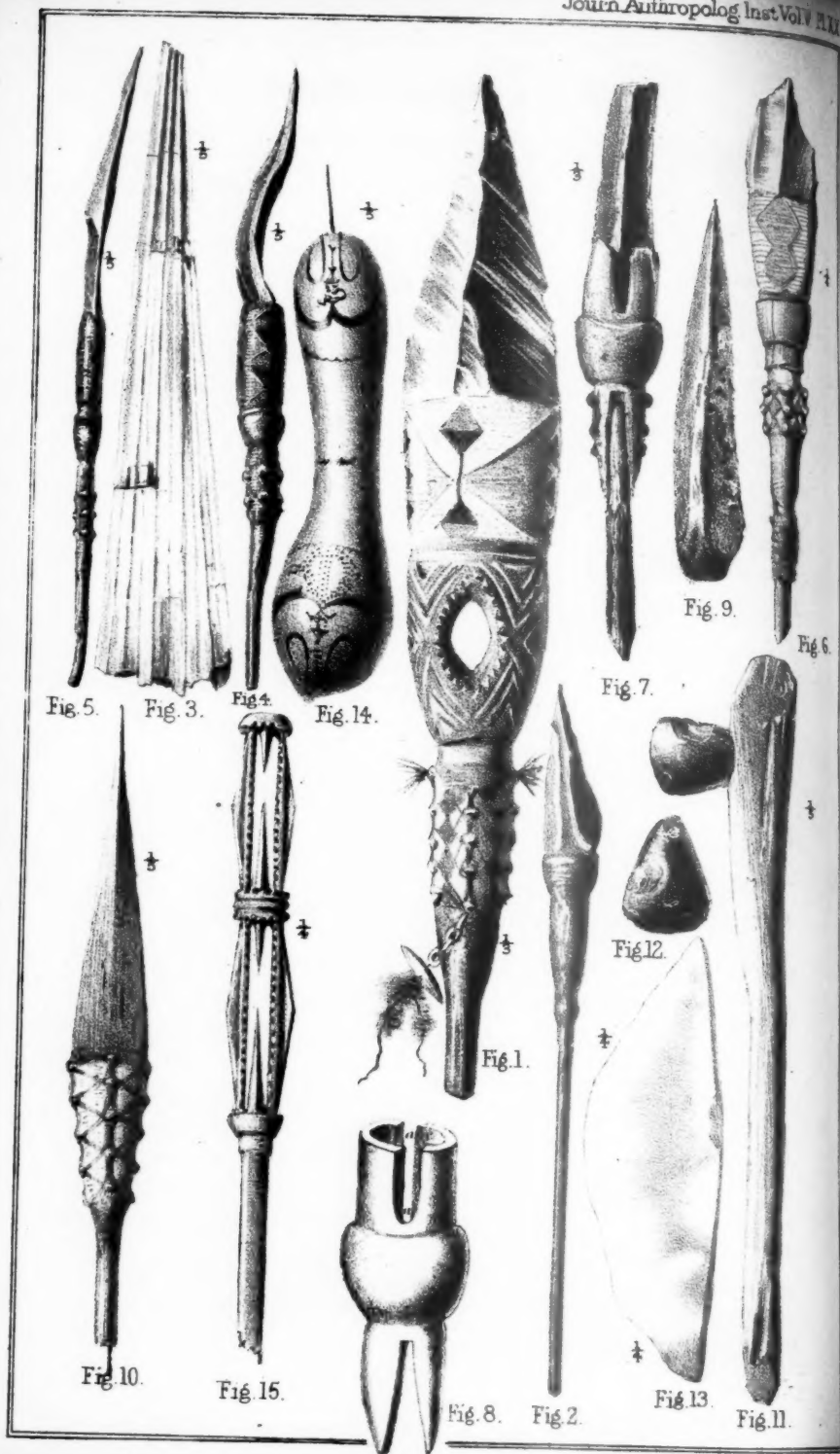
§ Die Carolinen Insel-Yap oder Guap. Nach den Mittheilungen von Alf Tetens und Johann Kubary. Journal des Museum Godeffroy. Hamburg. Heft II, 1873, p. 12, &c.

§ Chamisso. "Gesammelte Werke," Bd. VI, 1836-9, 103. Cited in "Waits Anthropologie," Bd. III.

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nesian language in which the numerals are formed in the manner in question.*

The Yap Islanders are amongst the few Western Micronesians who chew betel, and they are believed to have learnt the habit from the Malays, but it is remarkable that their words for areca nut and the lime used with it differ entirely from the Malay words, and appear closely allied with those in use at the Admiralty Islands.

Lime is in Yap, waej; in Admiralty, wav; in Malay, kapur. Areca nut, Y., mbun; A., chavica, betel leaves, mbung; Malay, areca nut, pinang. The word mbung is applied in the Admiralty Islands to the leaves of the betel pepper, in Yap to the areca nut, but it is possible that at the Admiralty Islands the word includes areca nut as well as the leaves. I cannot find words for these widely spread chewing requisites closely resembling mbun and wav in any other of the Malay or Papuan languages, except perhaps the form of the Malay kapur in Wokan Aru Kwar.† But in the very copious list of native names of plants of the East Indian Archipelago, by G. J. Filet,‡ the Malay word nibong is given as the name of a species of Areca palm, Areca nibung, whilst djambéh = Areca catechu and pinang areca alba, and A. glandiformis. Possibly the word nibung may be the origin of the Admiralty and Yap mbun, though the Areca nibung has a small fruit not used for chewing as far as I know. The terms for betel and areca nut used at the Louisiade are very different, but the word for lime, hawi,§ possibly is allied to wav. In New Ireland the term for lime is emban; areca nut, boual; betel pepper, poque.|| At Dorey, New Guinea, areca nut is mereun; betel pepper, naiel; lime, affer. Possibly the Admiralty Island terms mbung and wav come from mereun and affer, and the islanders learnt the habit of chewing from thence. One or two further resemblances

* See Vocabularies in "Hale's Ethnography and Philology of the U.S. Exploring Expedition." Philad., 1846.

Cheyne. "A Description of the Islands of the Western Pacific North and South of the Equator." London, 1852.

Marsden's Miscellaneous Works. London, 1834, p. 796.

Turner. "Tables of Languages in Nineteen Years in Polynesia." London, 1861. I have been unable to refer to v. Kittlitz "Denkwürdigkeiten auf einer Reise nach d. Russ. Am. Mikronesien u. Kamschatka, 1826." Gotha, 1858.

Lesson "Voyage autour du Monde." Paris. Pourrat frères, 1839. T. ii, p. 531 (numerals of Hogolu).

† "Korte Woordenlijst van de Taal der Aroe en Key Eilanden." H. C. Eijbergen. "Tydschr. voor Indische Taal Land en Volkenkunde." Batavia, 1864, p. 557.

‡ "Inlandische Plantennamen Bijeenverzameld en in Alphabetische Orde gerangschikt door, G. J. Filet. Naturkundig Tydschrift voor Nederlandsch Indie." Batavia, Lange and Co., 1859, 4de ser, 5de deel, p. 1.

§ McGillivray, l.c., p. 317.

|| Lesson, l.c., t. ii, p. 54.

between the Yap language and that of the Admiralty Islanders occur, but most of the words are very different. Woman is in Y., bepin, in A., bibi; hair, Y., lulegenn and pui, A., langam pui; arm, Y., peei, A., bui. These are resemblances in words which are to a great extent peculiar in the languages. Words like niu, cocoa nut, and hama, pimaon, man, are widely spread sounds for the same meanings.

It is possible that the resemblances between the Admiralty and Yap languages may have no real significance, and would disappear were any but a mere fragment of the Admiralty Island language available for comparison, but it is at all events worth having attention drawn to it. The Admiralty Islands are distant at least 850 miles from Yap, and almost the whole of the Carolines, the Louisiades, New Guinea, and many other islands lie much nearer. The possible drifting of a Yap canoe to the Admiralty Islands might account for the similarity of words such as those for lime and betel in the two islands, but not for the peculiar method of counting, since different words are employed in the two cases.

The Admiralty Island language contains many words of direct Malayo-Polynesian affinity, and it is in these, and not in the other forms, which might be supposed to be of Melanesian affinity that it resembles the language of Fiji and of the N. Hebrides. The following table shows these Malayo-Polynesian words:—

Comparison of Admiralty Island words with those of Fiji, Polynesia, and the N. Hebrides.

	Admiralty Islands.	Fiji.	Polynesia.	N. Hebrides.
Man.. ..	hams.	tamata.	various similar sounds.	
Father ..	..	tama.	tama.	
Breadfruit ..	un.	uto.	ul (Rotumah) ulu Samoa.	ulu.
Water ..	wai.	wai.	wai.	wai (Annatom).
Cocoanut ..	niu.	niu.	niu.	
Ear ..	darinya.	talinga.	talinga.	talignan (Mallikolo).
Tongue ..	arime.	earna.		
Eye ..	manna.	mata.	mata.	
Tree ..	kau.	kau.	kau.	
Pig ..	po.	Similar sounds, such as puaka, in both Melanesian and Polynesian languages.		
Fish.. ..	uke.	ika.		

I have not been able to find resemblances between the other

words of the Admiralty Islands and those of Melanesia; indeed they seem remarkably different, and even in the case of the few New Ireland words given by D'Urville*, there seem to be no resemblances, nor do any occur in Rosenberg's† short list of words from Humboldt Bay, New Guinea, with which place Dr. von Willemoes Suhm thought the Admiralty Islanders were acquainted from their understanding the native name of the bay Telok lintju.

The word used by the Admiralty Islanders for iron, laban,‡ is interesting. It is not a modification of any European name, which they possibly might have heard on their first acquaintance with it, but they apply to iron the same word by which they denote the ore of manganese, which they use to blacken their bodies, and which no doubt has been very long in use by them. Hence laban means metal or substance with metallic lustre generally rather than iron.

With regard to the grammar of the language it may be remarked that there seems to be an absence in it of indication of cases in the substantive by means of prefixed particles. Batu hama is a man's head; batu po, a pig's; batu bue, a turtle's; bue bu, turtles' shell. The terms were very frequently used during purchase of these articles, and no connecting particle was heard. In all Melanesian languages such particles exist.§

Expression of the emotions.—A native expressed *astonishment* and *admiration* at the vast size of our ship to me by holding up his hands vertically, with the palms facing forwards, and moving them upwards with a series of jerks as if to express the great height.

Another man put his finger in his mouth in expressing astonishment.

The natives, when talking in an eager excited manner amongst themselves, ran their voices occasionally into a kind of falsetto, producing a sort of affected girlish tone. I noticed the same peculiarity amongst the men of Api, New Hebrides.

Rage.—I had an opportunity of seeing the chief, Oto, in a furious rage. His upper lip was raised so as to show his teeth, which were clenched; his brow was wrinkled, his eyes starting, and his head lowered and jerked towards the object of his wrath as if he meant to attack him with his teeth. He had a most horrible appearance.

* "Voyage de Découverte de L'Astrolabé." D'Urville: Philologie. Paris, 1834, p. 143.

† Rosenberg, "Nat. Tydsch. voor Neder. Indie," xxiv, Deel., Batavia, 1862, p. 333.

‡ Labillardiere gives the word for iron, constantly uttered by the natives, as capelle. He must have mistaken the sound.

§ Von der Gablentz, &c., p. 256.

Delight.—A man clapped his hands to express his delight at being towed along rapidly in his canoe by the steam pinnace.

Suspicion and surprise, as when the natives saw the steam pinnace for the first time, was expressed by knitting the brows.

Laughter is as usual. In the young, in which the nostrils are usually considerably patent, it produces a curious effect. The upper lip is carried far up, and the septum nasi being carried with it, the patent nostrils, so conspicuous before, disappear, and reappear as the grin ceases.

Grief.—A man at Dentrecasteaux Island nearly cried with rage and grief at not getting a hatchet like his neighbours. The muscles of his face, especially those round the eyes, were violently contracted, and twitched convulsively.

Affirmation is expressed by slightly jerking the head up, as at Fiji.

Negation is expressed by a most extraordinary and peculiar method. The nose is struck on its side by the extended forefinger of the right hand, the motion being as if the tip of the nose were to be cut or knocked off. This sign was invariably used to express refusal of proffered barter, or that a native had not got some article asked for. It is capable of various modifications. The quick decided negative is given by a smart quick stroke on the nose. In the doubtful, hesitating negative, the finger dwells on its way, and is rubbed slowly across the nose.

Attention is attracted by a sort of hissing sound, tsit tsit.

Beckoning is performed with the hand held erect with the palm forwards, and moved towards the person beckoned to.

On the first canoes approaching the ship, paddles were held up and waved to express friendship.

Diseases.—The fungoid skin disease (*Pityriasis*) so common at Humboldt Bay, the Āru and Ke Islands, was not at all common amongst the Admiralty Islanders. I saw only four or five cases of it. One man had a large tumour on the side of the face, attached to the ear; another a large tumour in the groin, which Dr. Crosbie, Staff Surgeon H.M.S. "Challenger," thought was a femoral hernia.

Population.—As far as we could conclude from the extent of our observations, the Admiralty Islands are very thinly populated indeed. The main island about Nares' Anchorage is entirely uninhabited, but a small settlement was found on the shore to the east, not far from the mouth of a small river. This settlement was apparently recently established. The natives must certainly at one time have lived or squatted at various spots all over the tops of the hill ridges, for the numerous clumps of cocoa nut trees on these ridges almost certainly mark a spot inhabited at some time or other. At present

the natives seem to confine their dwellings almost entirely to the small outlying islands, no doubt for purposes of protection from one another. Only two of the many small islands about Nares Anchorage, Wild Island and Dentrecasteaux Island, are inhabited. On Dentrecasteaux Island, in the fortified village, there are about 22 houses, and about 30 houses in the island in all. The population is probably about 250 or 300; that of Wild Island is greater, probably between 400 and 500. On one evening 42 adult men left the ship for Wild Island. I did not count more than 100 men and boys in canoes around the ship at any one time. Natives from some distance along the coast visited the ship constantly for barter, &c. On one occasion six canoes with about 65 men in them thus arrived in one lot. The population seems to be distributed here much as occurs generally in Melanesia (Waitz, T. III, p. 559), *i.e.*, the settlements are only on outlying islands, river mouths, and eligible spots on the coast, the inland districts being probably uninhabited. Gerland gives the general population of Melanesia as 142 to the square mile.

Clothing.—The only clothing worn by the males is a piece of bark cloth. This is about five feet long, and about six inches broad, and is in the form of a long tube or sac, open at both ends, being evidently drawn off the cut limb or stem of a tree entire. The cloth is white when fresh, but is often reddened by the natives. It is worn in the usual T-bandage way. The natives, when they have not this cloth on, wear a shell (*Ovulum ovum*), on the penis. The shell (Pl. xxiii, figs. 4, 5) has its inner whorls cut out, but not so as to widen the mouth very much, if at all, and a very sharp edge is left at the cut surface, and it is extraordinary that it can be worn without inconvenience.* The shell is usually worn so that its narrow mouth flattens and nips the penis, just behind the glans, but it is not always in such a position. I saw one man alongside the ship who had the shell on in such a way that the prepuce was nipped over the middle of the glans, and the glans flattened out to an astonishing degree. Another with a penis of unusual size, had the shell embracing the end of the prepuce only, which was drawn tight forwards over the glans. The shell was very seldom worn underneath the cloth. When the cloth was put on, the shell was carried in a small bag hung round the neck. The shell was sometimes plain, often tastefully engraved with the usual zig-

* Several authors, imperfectly following Labillardiere, have described the shell as having a hole bored in it (see Meinike, "Die Inseln des Stillen Oceans." Leipzig, P. F. Rohberg, 1875, 1er th. s. 145), and regarded it as a mere covering. Labillardiere describes appearances of ulceration of the penis as occurring in some instances from irritation caused by the shell. I observed no such condition.

zag patterns. Only adults wore the shell. Boys wear the cloth before they assume the shell. The men always cover themselves hastily on removing the shell for barter, and evidently consider that they are exposing themselves either indecently or irreligiously, if they show the penis bare. A boy whom I came upon suddenly, with his cloth undone, replaced the covering in a great hurry. Similar observations were made by former visitors to the islands, but some men who had no cloths with them, remained exposed after Labillardiere had purchased their shells.

Various surmises have been made with regard to the meaning of this strange decoration of the penis. A somewhat similar custom is common to a large number of Melanesians and Papuans. The New Caledonians, *e.g.*, decorate the penis, binding it up in an extraordinary manner. The Humboldt Bay people wear gourds in the place of shells, but are not in the least ashamed of being uncovered. In Waitz (Vol. iii), the conclusion is come to that the glans penis is sacred to the god, and therefore not to be exposed to the view of man. Whatever the origin of the custom may have been, it seems very probable that the idea of circumcision may have arisen from it. It would seem possible that unintentional circumcision may have come about by swelling of the penis when confined in the narrow sharp-sided slit of the shell. Or that, the prepuce having become swollen, and being tightly nipped by the shell, the shell may have had to be cut off by division of the prepuce, and beneficial effects having followed, circumcision may have been generally adopted. Circumcision is practised in many parts of Melanesia, as at Kunai, New Hebrides, and at Fiji. At the Nitendi Archipelago, the upper part of the prepuce is cut off. In the modern Jewish rite, the prepuce is held and drawn forward in a narrow slit in a silver guard.

It is just possible that the gourd or shell may have been adopted to check a display in public of sudden sexual impulses amongst a people otherwise unclothed. Erection of the penis must be an impossibility, or cause severe pain, when either gourd or shell are worn. A display of every impulse in a community where women were not absolutely common property, would lead to unlimited fighting, and hence some means for restraining the outward show of these impulses would be adopted. This may have been the cause of origin of the sense of shame at being uncovered. The other articles worn by the male natives are to be regarded more in the category of ornaments than clothing, though it is impossible to draw the line between the two, and all clothing appears to have arisen from modifications of ornament, no motives of decency having operated

in its primitive development. The Humboldt Bay native, with ornaments of all kinds of elaborate make on his body, legs, and arms, leaves his organs of generation very commonly entirely uncovered. The far lower Australian of Cape York has absolutely nothing, neither clothes nor ornaments, except permanent cicatrices on his body, and occasional paint. Even in civilised countries dress seems still to be regarded in the light of ornament and display rather than covering for warmth or decency's sake. Thus, in the Philippines, amongst the Tagals and Bisayans, it is the commonest sight to see in the streets small children of both sexes with gaudy shirts on, which reach no lower than the navel, and nothing else. And in Japan, scruples about the covering of the genitals seem scarcely to have arisen, since formerly men and women regularly bathed together in public baths.

Women's Dress.—The women wear two bunches of a grass, or perhaps prepared from pandanus leaves, which are fastened by a belt round the waist, and hang one in front, the other behind, the hinder being the longest, and thus recalling, to some extent, the dress of some New Hebrides women. The bunches are of a natural dirty-brown, not coloured or ornamented in any way. This is the only dress of the women.

Amongst the lower races of savages, decoration follows the law which is almost universal amongst other animals. It is the male which is profusely ornamented, whilst the female is deprived of decoration. This condition is almost entirely reversed by civilisation, and the grade of advancement of a race may, to some extent, be measured by the amount of expense which the men are willing to incur in decorating their wives. The males in highly-civilised communities revert to the savage condition of profuse decoration only as warriors or officials and on state occasions.

Amongst the Admiralty Islanders, the decoration is almost entirely confined to the men, and these seem averse to part with any of their finery to the women.

Ornaments.—It must be remembered that Pacific Island native ornaments are all made to show on a dark skin. White shell or tusk ornaments look exceedingly well against the dark skins of natives, although when removed and handled by whites, they show to little advantage. The young girls amongst the Admiralty Islanders sometimes have a necklace or two on, but they never are decorated to the extent to which the men are. The old women have no ornaments. I saw one girl only with a necklace of the beads procured from the ship. Another girl had one of small unshaped lumps of wood, worn apparently rather as a charm than an ornament.

The men wear armlets of *Trochus niloticus* shell, like those of Fiji, the Carolines, &c. They wear often seven or eight on each arm. The rings are neatly engraved with lines forming lozenge-shaped patterns, and form very effective ornaments indeed.

Circular plates, ground out of *Tridacna gigas*, are also worn either as breast-plates or on the front of the head. The discs are faced with plates of thin tortoise-shell, perforated with very elaborated patterns. Pl. xxxi, figs. 1, 2, 3.

Long style-like ornaments of *Tridacna*-shell are worn dependent from the nose. They are closely like those which, in the Solomon Islands, are worn stuck transversely through the septum nasi, but are here always worn dependent by a loop of twine. Ear and nose ornaments are also made of the teeth of the Cuscus of the islands, and crocodiles' teeth. The ears and nose septa are always perforated. Pieces of rolled-up leaf are worn sometimes in the ear (perhaps those of *chavica betel*).

Necklaces of native beads of shell or cocoanut wood are also worn. Rings of tortoise-shell are commonly worn in the ears, as at Humboldt Bay. Both waist-belts and armlets of fine plaited work, with patterns in yellow and black, are common. These resemble those of the Aru Islands and Humboldt Bay.

Charms composed of human bones (Pl. xxi, fig. 7), usually the humerus, bound up with eagles' feathers, are worn suspended round the neck, and hanging down the back between the shoulders.

The body is seldom decorated with green leaves, as at Humboldt Bay. But leaves are occasionally worn, both hanging down the shoulders and on the arms. I saw them once so worn. Flowers, also, are seldom worn, but a single *Hibiscus rosa sinensis* flower is occasionally worn in the hair.

Hair-dressing.—The hair in the women, young and old, is cut short all over the head, and worn thus simply, without decoration of any kind. In the boys, the hair is short, I believe cut short, as in the women. Only the young men of apparently from 18 to 30, or so, wear the hair long and combed out into a mop or bush. In the older men the hair is always short. There are probably religious ceremonies connected with the cutting of the hair, for the very large quantities of bunches of fresh-looking hair suspended in the temples are probably not all, at least if any, taken from the dead.

The mop of hair in the young men, possibly the warriors (though numbers of adults still in full vigour had their hair short), is carefully combed out, often reddened, and greased. A triangular comb is worn in it, also plumes of cocks' feathers, fastened to hair-pins or plumes of the Nicobar pigeon, or the night heron. The mop of hair is sometimes constructed by

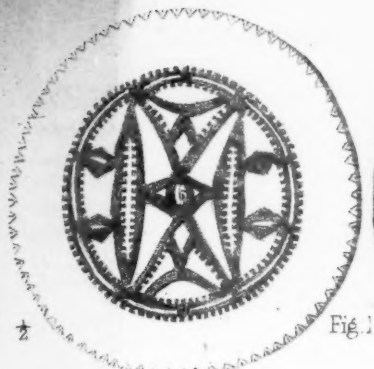


Fig. 1.

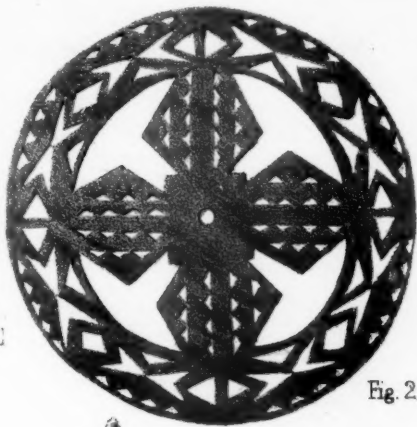


Fig. 2.

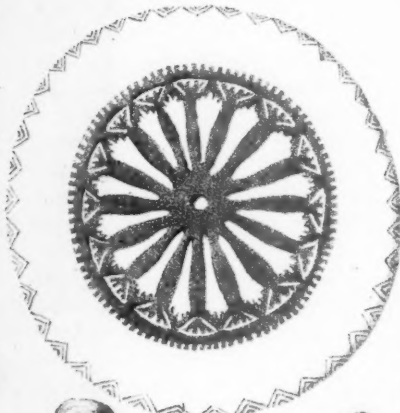


Fig. 3.



Fig. 4.

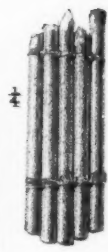


Fig. 5.



Fig. 6.



Fig. 7.

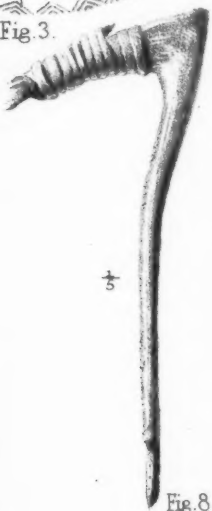


Fig. 8.



Fig. 12.

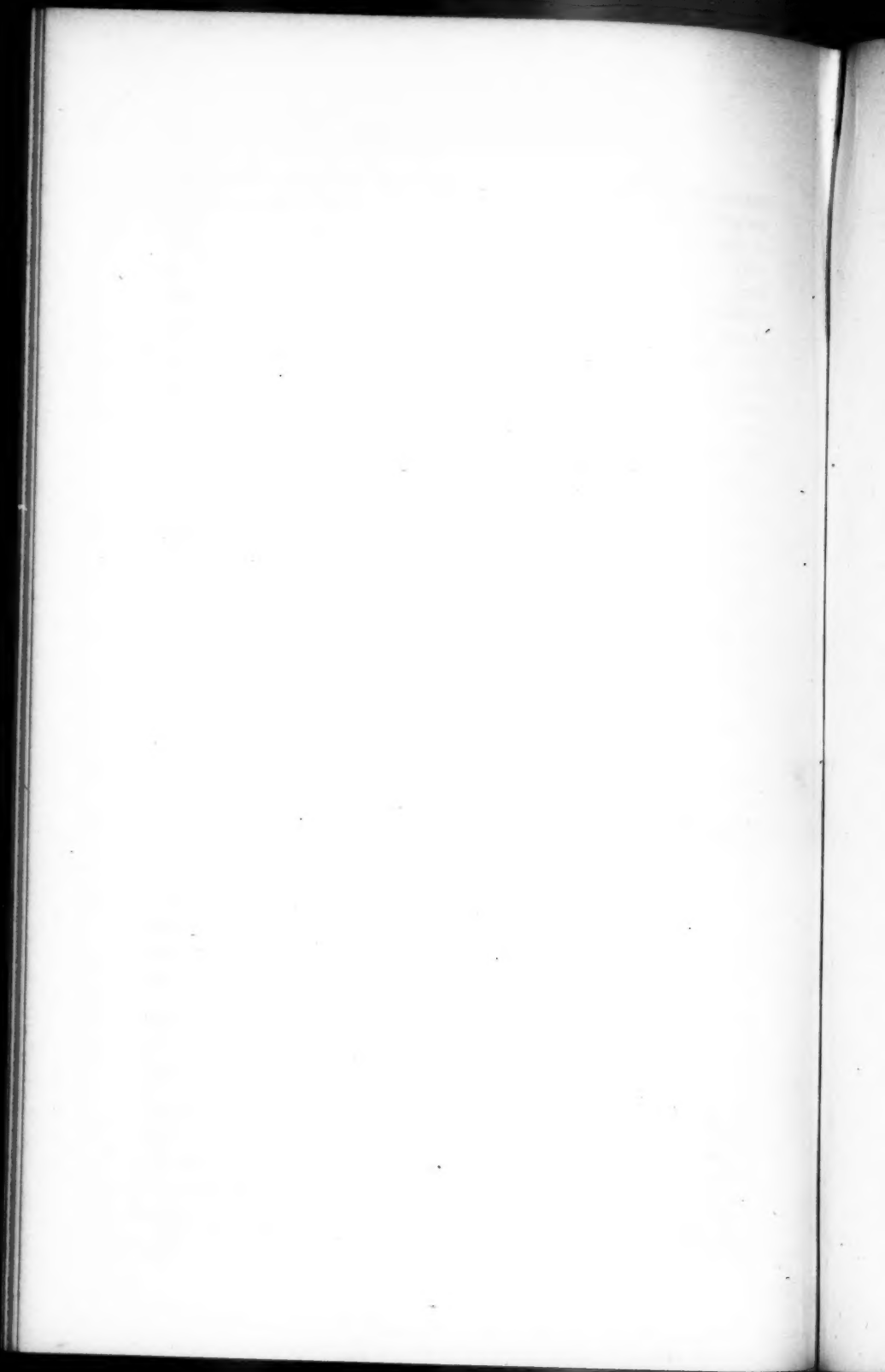


Fig. 9.



Fig. 10.





means of an encircling band behind the head into a cylinder projecting backwards and upwards, and on this cylinder a sort of bonnet of a leaf of a dracaena, or some other plant, folded over it, is often worn. The hair is not so decorated or cared for as at Humboldt Bay. Nor, *à fortiori*, does it approach in elaboration the head-dressing of Fiji, but one native, who was especially hairy on the face and body, had his hair very carefully cut and plaited behind into four tails, ornamented with knots somewhat in Fijian style. I saw no instance of the powdering of the hair with white, as described by Carteret, nor of the hair of the body being plucked out. I believe that the eyebrows are shaved.

Tattooing.—The males are mostly marked with cicatrizations on the chest and shoulders. These cicatrizations are in the form of circular spots, about the size of half-a-crown. They are sparsely disposed over the upper part of the chest and shoulders in front, and sometimes are continued down the back in two lines leading obliquely downwards from the shoulders to meet one another about the middle of the back. I saw no other form of cicatrization than this of circular spots. The marking appears to be assumed only at adult age. No boys had cicatrizations. One full-grown young man of 20 years or so had the spots fresh and raw, apparently raised by burning.

Tattooing is almost entirely confined to the women, with whom it is universal. Two males, however, were tattooed. One, a small boy, had a simple ring-mark round one eye. The other, an adult, had rings round both eyes. These were, however, exceptional cases. The tattooing is not made up of fine dots or pricks, but of a series of short lines or cuts.* The colour is an indigo-blue. The women are tattooed with rings round the eyes and all over the face, and in diagonal lines over the upper part of the front of the body, the lines crossing one another so as to form a series of lozenge-shaped spaces. The tattooing is sparse and scarcely visible at a short distance, and nowhere are the marks placed so close to one another as to form coloured patches on the body, as in Fijian women or Samoan men.

Painting.—The male natives occasionally had their chests and faces reddened with a burnt red clay. Sometimes one lateral half of the face is reddened, the other being left uncoloured. When vermilion was given to the natives they put it on cleverly and symmetrically in curved lines, leading from the nose under each eye, showing that they understood how to use it with effect. No doubt they paint themselves elaborately on festive occasions, in war, &c. They were fond of being painted, and

* Probably made with obsidian flakes. I am informed that the Solomon islanders are tattooed with short cuts thus made.

two natives who were painted on board all over with engine-room oil-paint, yellow and green, in stripes and various facetious designs, were delighted.

The natives were also often coloured black, the colouring matter used being an ore of manganese which gives their bodies a metallic lustre, like that given by plumbago. The blacking was extended over the faces and chests. The old women were often blackened, and a group engaged in singing an incantation were all blackened. A man, who was possibly a priest, was always most carefully blackened over the face, arms, and chest, and possibly the blackening has a religious signification.

Betel-chewing.—The natives nearly universally chew betel, using the pepper-leaf areca-nut and lime together as usual. Some one or two men were observed who did not chew at all, and had no lime-gourds. The lime is carried in gourds of a different form from those used at Humboldt Bay, but perforated in the same manner at one end with a small hole through which the long spoon-stick is inserted. (Pl. xx, fig. 14). The lime is conveyed to the mouth with the stick. At Humboldt Bay ornamental patterns are burnt on the gourds, which are worn on the penis, but the lime-gourds are not decorated. Here all the lime-gourds are decorated, but all with nearly the same pattern.

The use of kaava and of tobacco is entirely unknown to the natives.

The principal vegetable food of the islanders is cocoanuts and sago. The sago is prepared into a farine, and preserved in hard cylindrical blocks about a foot in height, and six or eight inches in diameter. Specimens of the preparation have been placed in the Kew Museum.

A Taro-caladium esculentum is also eaten. It is cultivated in small enclosures adjoining the houses, but to a very small extent, and there are no large clearings or cultivation of any kind which leaves its mark on the general features of the vegetation of the islands as at Humboldt Bay or Api, New Hebrides, Fiji, &c. Plantains are grown sparingly round the houses. A bread fruit tree also grows about the villages. Several wild fruits, a hog plum, Spondias, a small fig, and the fertile fronds of a fern are eaten by the natives, and they have a sugar-cane of better quality than that used at Humboldt Bay. Young cocoanut trees are planted about the houses, and protected from injury carefully by means of neatly-woven cylindrical fences.

Young cocoanut trees are also planted with care on the uninhabited islands. (On these subjects, see my "Notes on the Plants of the Admiralty Islands.")

The natives have no yams (*Dioscorea*), nor sweet potatoes.

As animal food they have abundance of fish, their pigs, and the cuscus, which lives in all the islands. They also catch or kill pigeons, and the night heron (*Nycticorax*), and probably other birds occasionally, for eating, and they gather shell-fish, &c., on the reefs and in the mangrove swamps at low tide.

Cooking.—The flesh of pigs is roasted by the natives, and served for eating placed on a quantity of the prepared sago in large wooden bowls, which are often elaborately carved. The cuscus is also roasted, and is carried about cold, roasted whole with head, tail, and legs intact, ready for eating by tearing it with the teeth at any moment. I saw no boiling being done, but the earthenware pots made by the natives were evidently used for that purpose.

There are wells on the inhabited islands; they are at some little distance from the houses. They are shallow holes dug in the coral ground. They are kept covered in with sheets of bark, &c., and at each cocoanut-shell cups are hung up for drinking.

Houses.—The houses of the natives are built on the ground, and always close to the shore. They are all of an elongate beehive shape, occupying an oval area of ground. On Wild Island they are built of a continuous wall and thatch of grass and cocoanut-leaves or similar material. They thus look like long haycocks somewhat.

In Dentreasteaux Island many of the houses have their walls built up neatly of wood cut into billets and piled as firewood is in Europe. The roofs are similar to those in Wild Island. They are supported on two stout posts rising from the foci of the oval floor in each house, and by a regular framework of rafters, &c. Shorter posts, placed along the walls at intervals, support the roofs at their periphery and the walls. Very often the ground is excavated to a depth of a foot or so beneath the house, so that the wall is partly of earth, and one has to step down to get into the house.

The dwelling-houses are mostly about 20 to 25 feet long, 10 to 15 feet in height, and about 10 feet in breadth. They have a low opening at one or both ends. To the main supporting posts of the roof are secured a series of wide horizontal shelves placed one above another, and on these shelves food, implements, &c., are kept. I saw these shelves in the women's houses. In some of the houses are also bed places, consisting of rough boards fastened against the side posts of the walls on one side, and supported by short special posts on the other. Arms, implements, &c., are suspended from the posts and rafters. The dwelling-houses have no further furniture. The posts are sometimes curved and painted, and occasionally a human skull is

fastened to a post, or placed under the thatch. Everything about the houses is rough, and there is no neatness as in Fijian buildings. About the houses in the villages bright-red dracænas are commonly planted as ornaments, representing the flower garden in its most primitive stage. The temples are houses exactly like the dwelling-houses, but larger—about 20 feet long, 15 broad, and 20 in height. Some have carved door-posts of wood, the respective carvings representing a male and female figure. The doors are closed by a kind of hurdle.

Canoes.—The canoes are more of the Polynesian than the Papuan form, *i.e.*, they have their bows and sterns low, and simply pointed, and not turned up and built so as to form figure-heads, as at New Guinea and the Aru Islands. The canoes' hulls are formed each of a hollowed trunk of a tree, with a single plank built on above it, and a gunwale-piece as a finish. The hollowed-out portion has slightly and equally rounded sides, and is not flat on one side and rounded on the other, as in the Carolines. The mast is stepped in the bottom of the canoe just in front of the horizontal outrigger platform. A pole of about similar length, with a natural fork at the top, is stepped against the foremost end of the cross-bar of the horizontal outrigger, and it and the mast being inclined towards one another, the mast is fitted into the fork at the top of the pole, and roused down with a rope-stay so as to remain firm in that position. The bow and stern are formed of small elongated blocks of wood built on to the ends of the canoe, and level above with the horizontal gunwale-piece. They are ornamented with a simple carved ridge or two, and with ovulum ovum shells, a single row of a dozen or so being fastened on either side. A horizontal outrigger extends from the middle of the canoe on one side, and is connected with a long canoe-shaped float, and opposite to it is an inclined shelf or deck supported on two or three stout projecting beams. A platform is formed with planks on the horizontal outrigger, and on the outer part of this a large store of spears and the mast, sail, &c., is kept. On the inner part the natives sit when not paddling, and stow on it some of their gear, food, articles for barter, &c.; but most of these are kept on the inclined platform, where also some of the crew often sit. The inclined platform not touching the water, and opposite to the outrigger, seems to be something peculiar to the Admiralty Islands. For figures of a canoe see Pl. xxii.

A canoe which I measured was 39 feet in length, 1 foot 6 inches in breadth, and 1 foot 4 inches in depth in the centre. In girth in the centre from gunwale to gunwale round the bottom, 3 feet 7 inches.

Another canoe measured in length 33 feet. Length of the

solid built on stern and prow, 2 feet. Breadth of the same at the tip, 3 inches. The sloping outrigger or platform was inclined to the water at an angle of about 30° .

It was 6 feet in length, 4 feet in breadth, *i.e.*, in line of junction with the canoe.

The main horizontal outrigger had a length of 10 feet, the stout cross-bar connecting its component pieces being at half its length or 5 feet from the canoe. Its breadth was 4 feet 3 inches. The length of the outrigger float 16 feet. Breadth in centre 5 inches. Depth, 10 inches. Thickness, 4 inches.

Depth of the canoe in centre 1 foot 9 inches. Breadth, 1 foot 1 inch. Two kinds of paddles are used, steering paddles and paddling ones.

The masts are about half the length of the canoe, and are stepped just in front of the outrigger platform. The yards are of about three-fourths of the length of the mast. The mast sail is nearly square in form. It is hoisted to the top of the mast, and set so that one corner is uppermost. The opposite corner does not nearly reach down to the canoe, hence the square sail being high above the water has a very peculiar look when seen over the sea at a distance. As at all Pacific islands, apparently the outrigger platform is the place of honour, and the seat of the head man or chief. Oto, the chief of Wild Island, never occupied any other position, and never touched a paddle.

Small canoes with simple outrigger, holding one or two persons, are used for paddling about the reefs round the islands. The large canoes are manned by from 10 to 15 men.

Swimming.—The natives swim hand over hand. They never take a header in diving, but jump in after anything upright, sinking feet first with the body inclined forwards.

Fishing.—Long sein-like nets are used for fishing. These nets are probably the property of a community, for they are kept hung up in the temples. I saw one about a fathom in depth and of very considerable length. Hand nets fixed on elbow-shaped frames of wood are also used. Stake nets are used, and lines of stakes are conspicuous objects just off the shore near the villages. I did not see whether the long nets were used attached to the stakes. A set of stakes was seen in the shallow bay near Wyville Point on the main island. Above the stakes on the top of a hill ridge is a clump of coconut trees. There is no village now at this spot; but it was probably once the site of one.

Fish-hooks are used made of *Trochus* shell (Pl. xxi, fig. 12), all in one piece. They are of a simple hooked form without barb. The natives did not seem to care for steel fish-hooks, and apparently did not, at first at least, understand their use.

It is possible that they have never found out the plan of using bait on a hook. All Polynesian and Melanesian fish hooks which I have seen are of the nature, of artificial baits of bright nacre, &c., imitating small fry in the water. If the natives did not understand the use of baits, it is no wonder that they despised European fish-hooks.

Technical handiness.—Pottery.—Large cooking pots of thin earthenware are made by the natives. The large pots are mostly nearly spherical in form, with a narrow neck. Some pots with widely open mouths are also made. Some of them have a pair of simple ring handles neatly turned over on either side. The pottery is not glazed, and is, as far as I saw, almost devoid of ornamentation.

As household implements the natives have likewise large wooden bowls in which they serve up their cooked sago. The men carry gourds full of chunam, with a small hole only at one end, fitted with a carved stick or spoon, for betel chewing. The cloth worn as a T-bandage by the men is made of the inner fibre of the bark of some tree (possibly *Thespesia populnea*), which is removed entire from the cut limb as a sac open at both ends, and 6 feet long. The natives have no regular tappa, *i.e.*, cloth in which numerous strips of bark fibre are welded together side by side. The cloth is sometimes coloured red, but never ornamented with patterns. Good cordage of bark fibre is plentiful, also string, and netted or plaited bags, like those of the Humboldt Bay men.

Waist-belts and armlets (Pl. xxi, fig. 6) are worn made of very finely plaited shreds of Pandanus leaf, or some such substance, of bright yellow and black, in patterns resembling those of the New Guinea and Aru Island natives, and those of the Carolines, although of course far inferior in workmanship to these latter. Rhizomorpha, though it is abundant in the woods on the main island, is not used for the manufacture of ornaments or dress, though it is in Fiji and Humboldt Bay.

The natives possessed considerable numbers of well made and carefully finished models of their canoes of various sizes. It is difficult to see what inducement savages can have to make such models. Sometimes, but rarely, chunam boxes are used which are made of a bamboo joint with a lateral branch retained inside, and made into a loop so that the box hangs as an armlet.

The knives are usually carried in the hair, but I saw one man with a knife in a band on his left arm, as cassowary bone daggers are carried at Humboldt Bay.

Metals.—The natives have no metals of their own, excepting the ore of manganese, with which they blacken their bodies. This ore they call "laban," and they have adopted the same term for iron.

They appear unable to work iron at all, since they refused any pieces not of a form immediately applicable to use. They preferred a small piece of hoop iron to a conical mass of iron weighing several pounds.

Implements.—The tool in most constant use by the natives is a small adze (Pl. xxi, fig. 8), consisting of a natural crook of wood with a *Terebra maculata* shell bound on to it, the shell being ground down until only one lateral half of it remains. Such small shell adzes were abundant enough still, but in most cases the shell had been replaced on the handle by a piece of hoop iron. Every man almost carried one of these small adzes hung on his left shoulder. From the houses large adze blades made of *Tridacna* and *Hippopus* shell were obtained. (Pl. xxi, fig. 9). They resemble somewhat those of the Carolines, but are very roughly made indeed, only the actual edge being ground. None were seen mounted, and they appeared to have gone out of use. Axes made of hard volcanic rock were also obtained from the houses. They have ground surfaces and are triangular in form, and resemble the stone adzes of the Solomons, but are mounted in an entirely different and very primitive way, as axes, being merely jammed in a slot cut in a club-like billet of hard wood near its end. (Pl. xx, figs. 11, 12). Only one specimen was obtained mounted. These stone implements did not seem plentiful, and the natives valued them highly and required a high price for them; and when I at first showed them a Humboldt Bay stone axe, to try and explain that I wished to buy such from them, they were immediately anxious to purchase it themselves. The chief had a very fine large one, with which he would not part.

The heads of the obsidian-headed spears serve as knives, being cut off just below the ornamented mounting which acts as a handle.* Long flakes of obsidian are however also mounted specially as knives in short handles. (Pl. xxi, fig. 10.) They are excessively sharp, and used to shave with even, but are of course very brittle. Pieces of pearl oyster shell, usually semi-circular in shape, ground down thin to an edge on the rounded border are used constantly as knives to cut cordage, &c. Knives made of the spine of a sting ray (*Trygon*) are also used. Large ground pearl oyster shells are used to dig with.

Weapons.—The Admiralty Islanders have no bows, slings, or throwing sticks, *ulas* (Fiji), nor clubs. Their only weapons are lances of several kinds, which are thrown with the unaided

* This is an interesting instance of the same instrument serving different purposes in a rude condition of the arts, other cases of which have been dwelt on by Colonel Lane Fox, F.R.S. Lecture "On Primitive Warfare," "Journal of the Royal United Service Institution," 1867-9.

hand, not even with a cord as in New Caledonia. They have no spears like the Humboldt Bay men, Fijians, &c., to be used at close quarters, and no shields.

The principal weapon is a lance formed of a small, usually flexible shaft of tough wood, a natural stem often, with the bark trimmed off, to the thicker end of which is attached a heavy head of obsidian, which, in size, appears out of proportion with the light shaft. The obsidian lance-head is usually of this conical form, but some have a knife-edge in front, and some are irregular. (Pl. xx, figs. 1, 4, 5, 6.) They are shaped by bold wide flaking. The points and edges are often slightly re-chipped in order to sharpen them, but the original faces and angles are never worked up for the sake of symmetry or balance, but remain rough. Many lances have their edges and points sharp and perfect, though formed entirely by the original flaking. The hinder borders of the lance-heads are simply rounded. They are secured in a socket of wood attached to the end of the shaft by means of a cement, and by being bound round with fine twine. The socket is hollowed out in a separate piece of wood, and in order to facilitate the scooping-out process two slots are usually cut in the faces of the socket. (Pl. xx, figs. 7, 8.) The shaft of the lance is spliced into a V-shaped slot in the lower part of the socket piece. A rounded strengthening piece is retained in the socket piece, between the actual socket and the narrowed part of it, in which the slot for the shaft is cut. A very hard and solid gum is used to bed the lance-head in its socket, and the shaft in its slot, and to mass together the turns of fine twine which secure the whole. In some lances the entire socket piece and the turns of binding twine are concealed by an even thick layer of the gum (Pl. xx, fig. 2), whilst in others the gum is used more sparingly, and the turns of twine and wood of the socket piece are exposed to view. In the former class of lances ornamentation is effected by patterns being incised in the layer of gum, and these have no coix lachryma seeds attached to them. In the latter class the upper turns of twine are arranged in diagonals, &c., separating the ornamental colours, and the actual wood of the socket pieces is carved and coloured. This gum employed is probably the same as is used for caulking the canoe seams, which is obtained from a brown ovoid fruit about the size of a goose's egg. The efficiency of the fixation of the stone head of the lance evidently depends mainly on this gum. The wood of which the socket-pieces are made is hard when dry and old, but probably much softer when cut in the fresh condition.

Many of the lance-heads are of most irregular forms, remaining just as they happened to flake out in manufacture. Some

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Fig. 1.

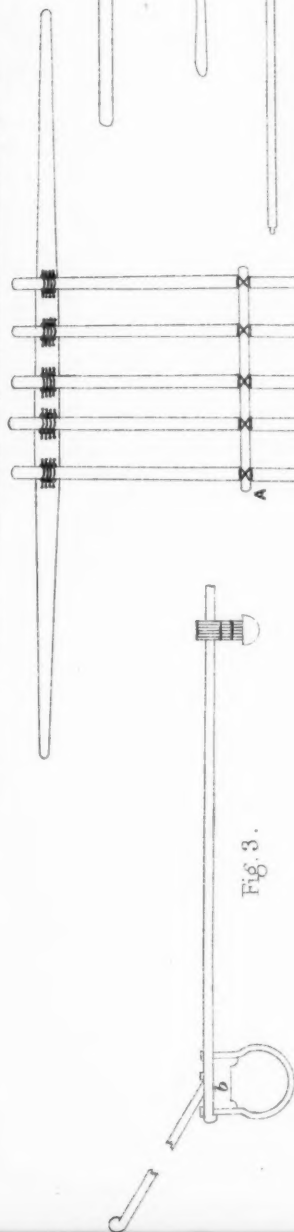
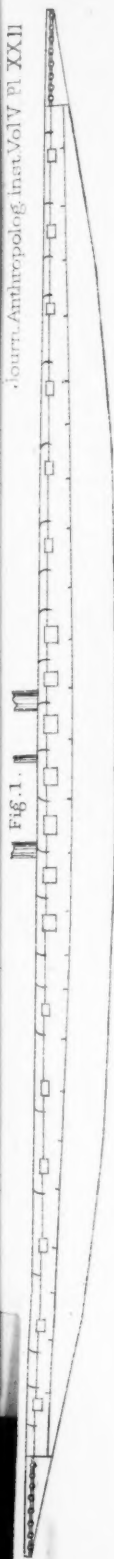


Fig. 3.

Scale of Feet.
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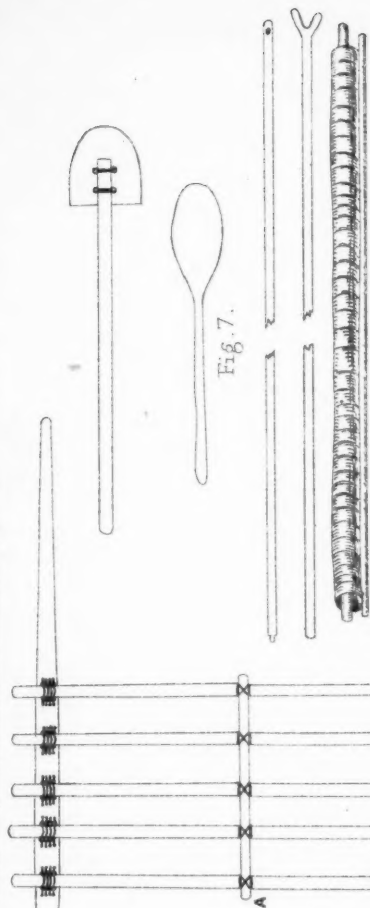


Fig. 6.

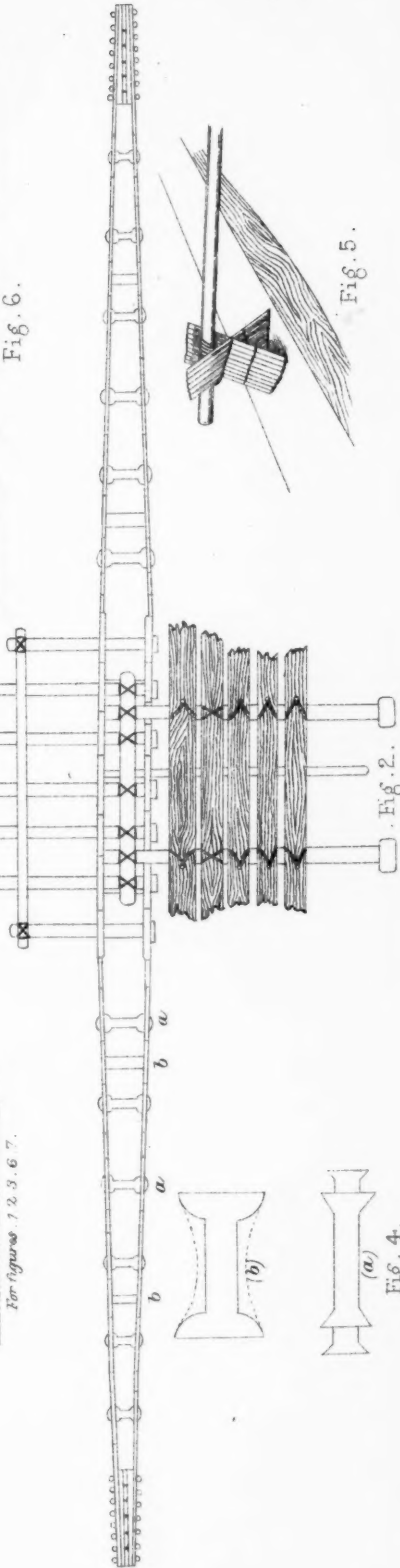


Fig. 2.

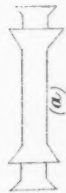


Fig. 4.



Fig. 5.



Fig. 7.



v
 c
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are thus extraordinarily long, some curved, &c., &c. They are most formidable weapons, especially to a naked skin. The shaft is an instrument merely for throwing point first a very heavy, excessively sharp pointed, stone, which must cut its way through everything. The socket pieces of the lance-heads are elaborately decorated. Some lances have a lozenge-shaped perforation in the socket piece beneath the head. Some have small tufts of cuscus hair fastened on to them just beneath the head. Two such which I obtained had these tufts wet with some oily substance, but apparently not poison. The heads of the javelins are kept covered with a conical sheath of dried plantain leaf made to fit. (Pl. xx, fig. 3.) The natives possess an enormous store of these weapons. They have piles of them lying on the outriggers of the canoes. On shore the men commonly carried two or three in their hands. In a dispute alongside the ship one of the lances was instantly snatched up and made ready. They are used for hunting wild pigs as well as for fighting. The natives pointed to the mountains of the main island as the source of the obsidian. They parted with the lances readily, and the material must be abundant. The lances are thrown in the usual manner, grasped by the naked hand, being first made to quiver by a shaking motion of the hand for some seconds.

Some of the lances have shafts of a light but rigid reed. Some have large carefully cut sharp-pointed heads of hard wood. The wood is painted of the same colour as the obsidian, and at a short distance looks exactly like it. Some of the wooden heads are longer and larger than any of the stone ones. I several times bought such, thinking I had before me excessively fine obsidian weapons. (Pl. xx, fig. 10.)

Besides the larger lances, small darts are used, having pliant, very light stems about a yard long, and heads of small sharp chips of obsidian, often of very irregular form, apparently the refuse chips from the larger weapons. These darts are carried about done up in bundles of a dozen or so. A guide whom I took on Wild Island carried such a bundle on his shoulder all the way.

Another kind of dart has the stem of reed and a head of hard wood of a somewhat conical form, with a knob at the base of the cone. The darts are of the same length as the others, and are likewise carried in bundles. They are, I believe, thrown overhand, being held by the hinder extremity, and swung round vertically.

I saw no other weapons. There are no defensive weapons, shields, &c. Though there is an enormous abundance of wild pigeons at the island the natives have invented no means of shooting them. They can only climb the trees and catch them at roost, or knock them off the nest.

Art Carving, &c.—The natives are extremely expert in wood carving, and show most remarkable taste in their designs. The lance-heads are often carved. (Pl. xx, fig. 1.) The carving taking the form mostly of incised patterns, the effect being heightened and beautified by the use of black, white, and red pigments.

The white coral lime, the red burnt clay, the black, possibly charcoal of some kind. The guardian deities carved on the door-posts of the temples and posts of the houses are ornamented also in the same style. Similar patterns are graved on the ovulum shells and armlets. (Pl. xxiii, figs. 4, 5.) These patterns are all modifications of the lozenge or diamond, and without curves; but besides this, various patterns are burnt in upon the surfaces of the chunam gourds, and in these the lozenge is combined with various curves. (Pl. xx, fig. 14.)

An entirely different class of carving is that of the large wooden bowls which are used for eating out of. These resemble somewhat those of the Solomon Islanders, being, like them, blackened, but in the present case they are most remarkable for their graceful forms and delicately carved handles. The bowls are worked with wonderful precision, considering the tools available, to the circular form, appearing as true as if turned. They are widely open, and are provided with a pair of curved handles, which rise above the level of the tops of the bowls, and are sometimes ring-like, sometimes cut in a delicate spiral. They are always ornamented with perforated carving, and often bear a pair of crocodiles, or roughly executed human figures on their outer margins. The bowls stand always on four short legs, like the Fijian kaava bowls. They never have a circular bottom, no doubt because there are no level surfaces for them to rest upon, and because the idea is derived from a four-legged stool.

A still more remarkable appreciation of symmetry and fertility in design is shown in the patterns which are cut upon the circular plates worn sometimes on the forehead, oftener on the breast. These consist of circular white plates ground down out of *Tridacna* shell, with a hole in the centre for suspension. On the front of this white ground is fastened a thin plate of tortoise-shell, which is ornamented with fretwork, so that the white ground shows through the apertures. The patterns are of endless variety, *no two being alike*, and show all kinds of combinations of circles, triangles, toothing, radiate patterns, &c. The shell background is often graved also at its margin. Symmetry is evidently striven after, but with the appliances available the execution falls short here and there of the design. Nevertheless these ornaments are very beautiful. (Pl. xxi, figs. 1, 2, 3.)

A regular style of ornamentation is preserved for each class of ornaments, weapons, &c. Thus I saw no ovulum shells with

curved patterns like those on the gourds. Both these and the bracelets bore simple patterns of diagonal lines graved and blacked. The spears, also, never bore curves.

The canoes are ornamented with red and white colouring, the ends of the cross pieces, &c., being picked out with paint, but they have no carved prows as have those of Humboldt Bay and Dorey. The sticks or spoons with which the chunam is carried from the gourds to the mouth are often richly carved in the handle. The skulls of turtles suspended in the temples are ornamented with patterns painted in the three usual colours. The human skulls are likewise decorated, and some have eyes of pearl shell inserted into the orbits on a background of black clay.

Music.—The musical instruments used are the conch shell, perforated on the side as usual, a very simple Jews'-harp, made of bamboo, of the usual Melanesian pattern, pan pipes, of three to five pipes of different lengths (the New Hebrides natives have pan pipes with three pipes), (Pl. xxi, fig. 5,) and, lastly, drums. These latter are hollowed out cylinders of wood with a narrow longitudinal slit only opening to the exterior. Some of them are small, $1\frac{1}{2}$ foot or so in length, and are carried sometimes in the canoes. The larger drums I saw only in the temples. They are cylinders, 4 feet in height and $1\frac{1}{2}$ foot in diameter, and are fixed upright at the entrances of the temples. There were four such at the four corners of one temple. The slit in these is not more than 4 or 5 inches broad, and I do not understand how the cylinders are hollowed out by the natives. Very similar drums exist at the New Hebrides, at Efate, *e.g.*, where they are stuck upright in the ground in circles.* They seem to be an improvement on the Fijian death drums, which are simple widely open troughs, and a step towards the very narrow mouthed wooden drums or bells of the Japanese. The natives seemed to have no idea of tune, they blew the notes on the pan pipe haphazard. The chief of Wild Island blew a child's tin trumpet with evident satisfaction. He appropriated it from one of his subjects, to whom I had given it, and came off to the ship standing on his canoe platform and blowing it with all his might. The drums were constantly sounded on Wild Island often in the afternoon.

Dancing and singing.—The women, both old and young, dance, moving round in a ring with a quick step. The men signified that they danced too, but were not seen to do so. I did not see dancing myself.

I saw some old women performing a kind of incantation.

* "A Year in the New Hebrides," by F. A. Campbell. Melbourne, George Robertson, 1873, p. 111, figure Fili Id Efate.

They sat on the ground in the yard of one of the houses, four of them sitting facing one another in a circle, whilst two sat outside the circle. They had their faces and bodies blackened. They uttered at regular intervals a chant, ai ai ai ai ai umm. The commencement was shrill, in a high key, and the terminal umm was sounded low, with the peculiar humming lingering sound, just as in Fijian chants.

Trade.—The Admiralty Islanders had possibly traded with Europeans before our visit within tolerably recent time.* They came off at once to the ship in the utmost hurry, in a strong breeze, thinking probably that she was not coming into harbour, and they held up all sorts of articles of barter. They brought off their tortoiseshell ready done up in bundles, and they knew the relative value of various qualities. The chief had a large European axe, which I believe was not procured from the ship, and many natives had hoop iron adzes. Nevertheless they must have had very little experience indeed, otherwise they would not have taken old German newspapers freely as trade as they did at the first, thinking them to be fine cloth, until rain had fallen. They soon took to making trade goods, shell hatchets, and models of canoes, *e.g.*, which were as badly made as our own trade gear. They understand the rules of barter well, and, as in Labillardiere's time, seem anxious to pay their debts. They pretended, with many expressive grimaces, to be unable to bend pieces of tortoiseshell which they offered for sale, and of the thickness (*i.e.*, fine quality) of which they wish to impress the purchaser. They often thus pretended to try ineffectually to bend very thin pieces indeed, and fully entered into the joke when we did the same with thin bits of hoop iron. They always required to see the hoop iron tested by bending before accepting it. They must trade with one another regularly. They made signs that the ore of manganese which they use came in canoes from a distance eastwards. The native canoes are so seaworthy, and the natives so enterprising and fearless in going to sea, that possibly articles may pass by barter from island to island here over wide distances, even to New Hanover, New Britain, &c.

The natives took all the hoop iron from us which they could get, evidently receiving more than they could use, no doubt intending it for future barter. My colleague, the late R. von W. Suhm, believed that the natives on Wild Island recognized the native name of Humboldt Bay (Telok Lintju), and pointed in

* There are specimens of Admiralty Island lances and gourds in Col. Lane Fox's collection and in the Christy and British Museum Collections. These have been obtained from Cape York, and no doubt were taken there by tortoiseshell and pearl shell traders who had visited the Admiralty Group.

the direction of New Guinea, having knowledge of the place. Hence he thought that they visited the place to trade. I think, however, that he must have been mistaken. The Admiralty Islanders could never make a stand against a race armed with bows; they would be cut off at once; and had they once seen bows and arrows they would surely have adopted them. (The Australians have not done so at Cape York, though the Murray Islanders come to trade there and bring bows and arrows with them, but then they are far lower in intellect, and have the throwing stick.) Many other circumstances concur against the above hypothesis.

The Admiralty Islanders were anxious to trade with us to the very last, and followed the ship as she left the anchorage, with that intent.

Position of the women.—The women are in a state of subjection, as at Fiji. Their favours were offered us by the men, namely, by the Chief, Oto, who pressed the matter, and by others. This is unusual amongst Melanesians, and rather Polynesian. The women have houses to themselves, *i.e.*, there are special women's houses. Whether these are only for unmarried women or not I do not know; I think not. I saw an old woman and a young mother with a new born child in one, which I think was a regular woman's house. The unmarried men have special houses. Polygamy is practised. Oto, the Chief, told R. von W. Suhm that he had five wives. I do not imagine that the aged are killed. I saw several aged miserably lean hags, one especially emaciated and disgusting to look upon, and also old men. On one occasion amongst a party of 42 natives in nine canoes there were two old men, one with grey hair, the other somewhat infirm. Children are carried by the women generally on the back, but sometimes on the hip astride.

The Chief, Oto, pointed out one youth as his son, and took away presents which were given to him.

War.—The village at Dentrecasteaux Island is fortified. A palissade about ten feet high stretches right across the corner of the island, where the village lies shutting this off from the landing place. The path to the village led through a gate-like opening in the palissade, which seemed in not very good repair. The palissade was without ditch or embankment. The village itself was surrounded by a second wall, low, and crossed by styles. At Wild Island there was no fortification. The natives inhabit the small outlying islands, probably for protection from attack. Very few natives were seen living on the main land, and these few at one spot only. Former places of dwelling on the main land appear to have been abandoned. We saw no actual fighting, but in a quarrel about some barter alongside the ship, Oto

the Chief, attempted to strike a native in another canoe from a distant small island. He was prevented by his own men, who held him back. The opposite party at once got their spears ready, and threatened him with them.

I saw no traces of cannibalism, although an anonymous correspondent of the *Times* newspaper, writing from the ship, appears to have thought that he saw evidence of it. The inhabitants of each small island appeared to be under a separate Chief, and quite independent of each other. The Chief's power seemed to depend on his fighting qualities. The Chief of Wild Island had considerable power. He ordered all the canoes away from the ship on the first evening of our arrival, on our anchoring. He took articles away from men to whom they were given, and made arrangements for each man of a party getting a hatchet, &c. He never paddled himself, and he pushed canoes out of the way when approaching the ship. He, however, clamoured with the rest for presents and trade. He had no ceremonious respect paid to him at all.

Religion.—There are several temples in Wild Island. They have already been partially described. One such had as door posts a male and female figure roughly carved in wood, but elaborately ornamented with incised patterns and colour. Between the legs of the female figure was represented a fish. There are in the same figure black patches with white spots, which appear to mark out the breasts. The hair in both figures is represented as cut short, and thus the mop of hair of the warrior is not represented in the male figure. No clothes, *i.e.*, T-bandage of bark cloth, bulla shell, nor ornaments, such as earrings, nose ornaments, breast plates, &c., are indicated on the figures, and the male figure has no weapons. The ears of both figures are, however, slit for earrings, and it is possible that a zone of diagonal ornament passing round the body of the male figure represents the plaited waistbelt commonly worn. On the upper part of the chest of the male figure are a series of circular white ring marks on a black ground, which evidently denote the circular cicatrizations present in all the male natives. In the female figure the tattooing is possibly intended by a wide patch of diagonal ornamentation upon the abdomen, as also by lines drawn round the eyes, and not present in the male figure. In the male figure one lateral half of the face is painted white and the other red. The arrangement of paint in this way is in vogue amongst the natives here as at Fiji. I saw one Admiralty man with one side only of his face reddened, and in Fiji at dances it is common to see natives with one lateral half of the face blue and the other red or black. The penis of the male figure is represented as erect. All the ornamentation on the

figures is of the common zigzag pattern, and formed of a series of lozenge and triangular shaped spaces. The patterns are incised, and coloured of three colours, black, red, and white. The parts coloured white and red are cut in, whilst the patches of original surface left in relief are blackened. Guardian deities such as these are common in Melanesia and Papua, as is also their combination with representations of fish. Careful coloured drawings of the figures were made by Mr. J. J. Wild, artist of the Expedition, and my description of the figures is derived from these drawings.

Another temple had no figures but the four large drums already mentioned. To the rafters and supports of the roofs of these temples inside are fixed up quantities of skulls of pigs and turtles, all arranged regularly, with the snouts downward. The skulls were decorated with colours. With them were suspended large quantities of balls of human hair, some evidently old, others of recent date. These balls or masses of hair were suspended sometimes in networks of string, sometimes in small receptacles of a very open basket-work. Both the bunches of hair and the skulls appeared often to have regular owners, though dedicated in the temple. The natives parted with both freely for barter.

The hair is probably cut off as a religious ceremony. Some men had the hair recently cut off. (See on hair dressing *supra*.) A dugong's and a porpoise's skull were produced for barter. The natives evidently treasure skulls of all sorts. Human skulls are likewise kept stuck up in the thatch of the houses. At Dentreasteaux Island, one having an ornament in the nose was suspended to the front of a house over the doorway by means of a stick thrust through holes in the two squamous parts of the temporal bone. This skull the owner could not be induced to part with, but usually they were sold pretty freely, and they were in considerable abundance about the houses, but often much shattered. A dozen only were purchased. The natives are very superstitious. When a group was being photographed, the old women put up two long poles transversely between themselves and it in order to protect themselves from its evil influence. The chief and others were abjectly frightened at a squeaking doll, and signed for it to be taken out of their sight, and expressed a similar fear of goats which we offered them, saying the women would be afraid of them. When I began sounding the big drums in the temple, my guides hastily drew me out of the place in terror, and made signs that the people from the chief's group of houses would come and cut my throat.

A mystery was always made about the principal temple containing the images. Sometimes it was freely open, at others closed, and I was warned back by the chief on two occasions

when I attempted to enter. The temple with the drums was used for the suspension of the large fish nets, no doubt common property.

The charm, made of a human humerus wrapped round with feathers (Pl. xxi, fig. 7), and worn hung round the neck, was taken in the hand and flourished about, dashed against the ground, and used apparently to swear by during a violent harangue of one of the chief men of Dentrecasteaux Island, who wanted possibly to incite the natives to attack our boat, or to try and capture a much coveted bag of trade gear in it. These feather and bone charms are sometimes made of four human ulnar and radial bones, sometimes of hand bones, and one contained the bones of a large bird, probably the eagle (*Pandion haliaetus var leucocephalus*). It is a curious fact that one such charm which was purchased contained an imitation head of a human humerus, cut in wood. Possibly the owner intended to deceive his enemies by this artifice. Some of the officers told me that they made the natives readily understand when they wanted to visit the temple by pointing upwards. It would appear thus that the gods or religious influence is supposed to reside above, an idea still surviving amongst Europeans. The only appearance which I saw of a religious ceremony was the chant of the old women. One man who came off to the ship often, invariably with his body blackened all over with peroxide of manganese, was thought to be a sort of priest. He wore a narrow fillet round his head, with an ovulum ovum shell suspended from it on one side.

Burial.—The dead are buried in the ground. Two different natives, one on Dentrecasteaux Island, and the other on Wild Island, explained to me by signs in an unmistakeable way, that the skulls put up about the houses were obtained by burying bodies in the earth, and afterwards digging them up again. The value set upon the skulls and bones as ornaments, and probably also superstitious motives, are no doubt the reason why no marks of burial were seen. No mark is made probably, for fear of the bones being stolen. Two at least of the skulls procured were those of females.

Character.—The fact that some of the men restrain themselves and abstain from the use of betel, seems to be a proof of considerable strength of character. I gave a hatchet to a guide at Dentrecasteaux Island as pay, according to promise. He seemed grateful, and presented me with his own shell adze in return, unasked, and he made signs that the others had got enough, and that we were not to give more away; that we were being swindled. The natives seem extremely passionate. Oto was quite furious with rage when he attempted to strike the other



Fig. 1.



Fig. 2.

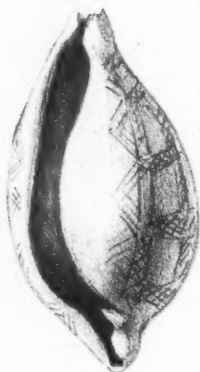


Fig. 5.

3



Fig. 3.

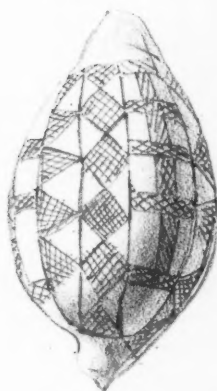
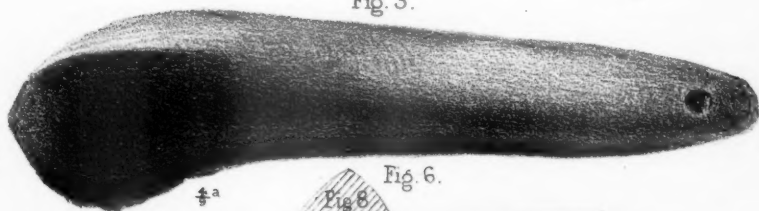


Fig. 4.

3



3^a

Fig. 6.

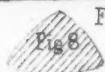
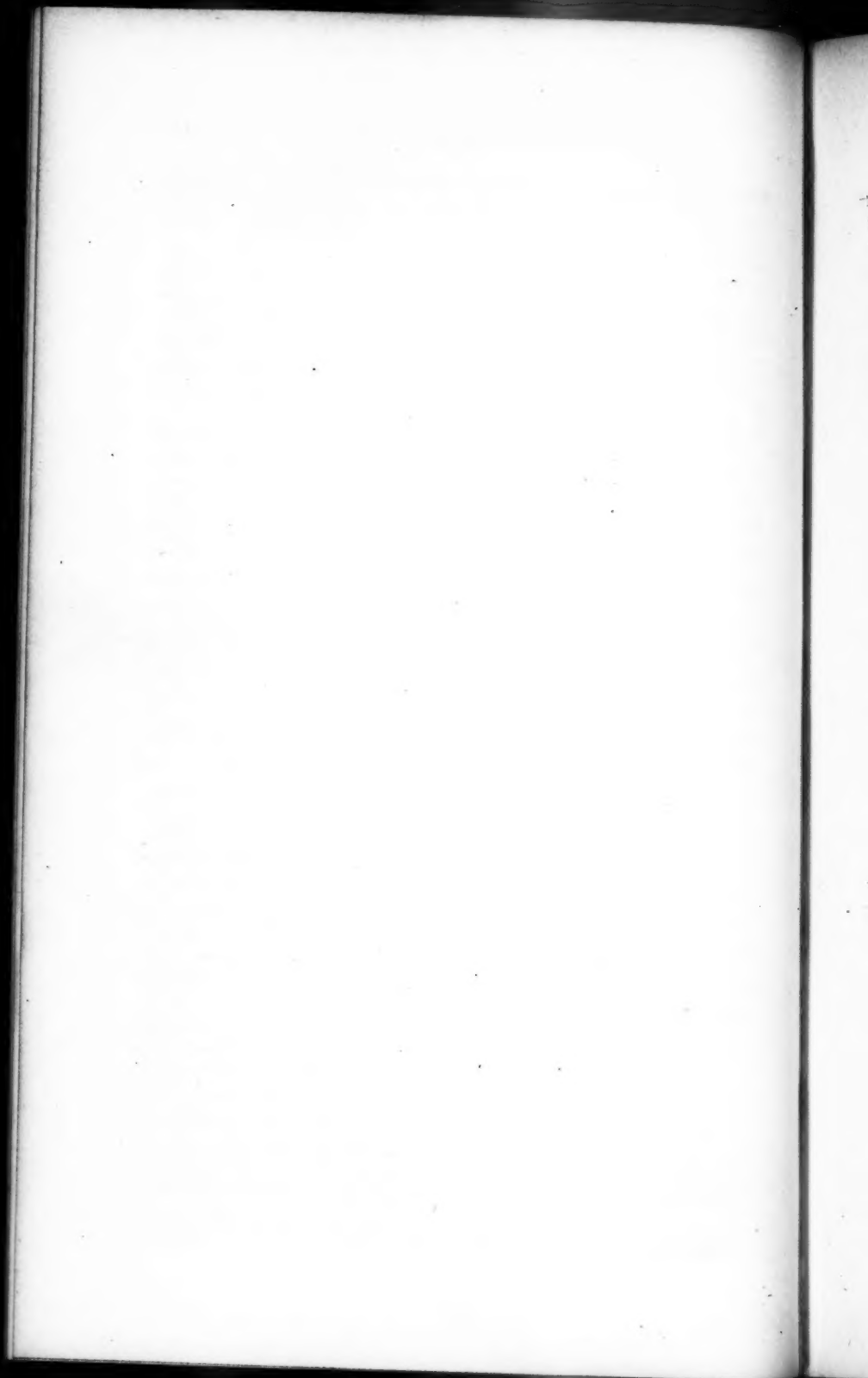


Fig. 8.



Fig. 7.

3^b



man. The natives when we saw them in the canoes alongside the ship, as described, were of course, in a highly excited state, the value to them of the iron procurable from us being hardly to be overrated.

The natives are quieter than the Humboldt Bay men. There was comparatively little noise when their canoes were alongside. There was no combined shouting. The natives are rapacious and greedy, and very jealous of one another. The chief showed all these traits in the highest degree. They were ready enough to thief, but not so constantly on the look out for plunder as the Humboldt Bay Papuans.

General.—The natives showed no great astonishment at matches or a burning glass, apparently understanding the latter, and motioning that the operator should wait until the sun came from behind a cloud. Looking-glasses were not at all understood. They were tried in all positions, as ornaments on the head and breast, for example. The natives seemed to see no advantage in seeing their faces in them. In Labillardiere's time they broke them to look for the picture, or man inside. Tobacco and pipes were not understood. Biscuit was eagerly taken and eaten. Great wonder was expressed at the whiteness of our legs and chests by the natives, and the women at Dentrecasteaux Island crowded with great curiosity and astonishment to look at a white arm or chest. The natives no doubt thought our hands and faces only painted white, and took our negro on board for a man who had not got the paint on.*

I am convinced that both the Humboldt Bay and Admiralty Island natives believed that we bought their weapons in order to use them as such. They frequently, when offering spears, &c., showed by signs how well they would kill. They are fond of ornament, though they have not devised anything like the amount of decorations which are worn by the Humboldt Bay men. The chief, Oto, went about with three bright-coloured cricket belts round his middle, but he provokingly wore a sun helmet, given to him by the captain, in order that he might readily distinguish him amongst the crowd, by proxy.

The natives of course did not understand our steam pinnace, nor apparently see in the fire the cause of motion. They came up to the cutter when sailing to get a tow for their canoes, expecting to see her go ahead, head to wind, in the same style.

The natives were much frightened at first at the sound of a gun, and astonished. A guide who went with me when I was shooting birds, stopped his ears at first, and bent down trembling every time that I fired. The natives were, however, not much

* Dark natives, I believe, often take white men for a race of Albinos, which occur not uncommonly amongst Melanesians at least.

scared by our firing our ship's guns and rockets at night, and came off to the ship next day to trade.

Canoes full of men leave the small inhabited islands every day, and go fishing, or visit the main island in search of fruits, shell fish, &c., whilst the women seem to confine themselves to their small native islets.

Changes in the habits of the natives in 100 years.—109 years have elapsed since Carteret discovered the Admiralty Islands, and 84 years since the visit of Dentreasteaux, yet the natives seemed to have changed very little indeed in their habits.

It is remarkable that Labillardiere states that the natives observed by him chewed no areca nut, and that none had their teeth discoloured by it. Lime and betel pepper leaves were used for chewing, but only the chiefs possessed these articles of luxury. Nevertheless Carteret specially mentions betel nut as chewed by the natives whom he encountered. The use of the nut has possibly been introduced into the northern part of the main island, since Labillardiere's time, but is ancient in the southern islands.*

Carteret does not mention the use of the ovulum shell, but mentions the obsidian-headed lances, earthen pots, &c. The natives of New Ireland preferred iron already in Carteret's time to any other article of trade, but he does not mention whether the Admiralty Islanders were acquainted with iron.

Labillardiere found the Admiralty natives clamorous for iron, and Dentreasteaux thought it probable that they had learnt to know its use from Capt. Morelle's frigate, which preceded him shortly in his voyage.

The natives appear, as was to be expected, less suspicious of strangers than formerly. Their weapons, &c., are just the same as they were 100 years ago, and even the curved ornamental pattern burnt upon the chiman gourds is identical with that in vogue at Labillardiere's visit. When Dentreasteaux approached the islands the canoes came off just as to the "Challenger," and stood off the ships some distance, whilst the chiefs hailed with words. Communication was opened with Dentreasteaux's boats by a slave being driven by repeated blows of a stick, administered by the chief, to swim to the boats with cocoa-nuts, as an *experimentum in corpore vili*. In one respect only besides that of the areca chewing the natives seemed to have altered, and that is that they do not now enlarge the openings in their ears to the enormous extent to which they did in the days of Labillardiere, as shown in his plates, where the loops hang down on the shoulders. Labillardiere says that the natives use their

* The natives of the Louisiade use areca nut and chunam, only without betel pepper. Macgillivray's "Voyage of the 'Rattlesnake,'" Vol. I, p. 222.

paddles as oars, not as paddles. This, as far as I saw, is not the case.

Affinities of the Admiralty Islanders.—The close resemblances of the Admiralty Islanders in one or two matters to the Papuans of Humboldt Bay, and their wide difference in most others, are striking.

The islanders resemble these Papuans in wearing a curious covering on the tip of the penis, and differ apparently in this matter from all other known races, though many Melanesians and Papuans decorate the penis in other remarkable ways; and in using gourds with spoon sticks for chunam. In their stone implements they differ widely from, and are far inferior to, the Papuans. Their houses, weapons, canoes, and modes of expression, differ also entirely from those of the Papuans. In wearing nose ornaments and slitting the septum nasi for them, they resemble Melanesians generally, Solomon Islanders as well as Papuans. The Solomon Islanders and Papuans wear their ornaments stuck through the nose transversely. The Admiralty Islanders use an ornament very similar to that of the Solomon Islanders, but wear it as a pendant. The Papuans were not ashamed of exposing their persons, and taking off their gourds, whereas the islanders were.

The most remarkable fact about the Admiralty Islanders is that of their having no bows and arrows, slings, throwing sticks, or throwing cords for their spears, no ulas, clubs, spears for hand to hand fighting, and no shields. Many other Melanesians have no bows and arrows, as the New Caledonian Loyalty Islanders, and apparently the New Britain and New Ireland races, and the same is the case with the natives of the south-east of New Guinea;* bows and arrows seeming to commence on the coast only at Humboldt Bay, but all seem to have slings or other additional means of defence. The New Britain people have flint (obsidian) headed "arrows without bows" (lances), and wooden axes.† The examination of the twelve skulls of the Admiralty Islanders obtained may possibly throw some light on their race affinities. Von Willemoes Suhm, who collected them, made some measurements of them, and I believe concluded that they were of Fijian affinity, but I am uncertain.

The natives are, I think, certainly of Melanesian rather than Papuan affinity, and probably will prove nearly allied to the New Hanover natives; but their nearest neighbours are at present very little known. The anthropological results of the

* "Australia Directory," Vol. II, Notice No. 19. London, 1875, p. 39. Note by Lieut. J. S. Dawson on the Natives.

† "Voyage of 'La Perouse.'" L. A. Millet Mureau. Trans. London, Lackington and Co., 1807, p. 265.

voyage of the German ship of war, "Gazelle," will, when published, no doubt throw light on the matter.

Dentreasteaux's ships visited the Hermit Islands (Los Erimitanos), and though the canoes of the natives were different, Labillardiere saw one native wearing an ovulum shell.*

Lieutenant F. W. Saunders, R.N., who visited the Hermit Islands, in H.M.S. "Alacrity," in 1874, says that there are two villages on them; but does not give further information.

Note.—A considerable portion of the above paper, though in manuscript at the time, was not read at the meeting.

DISCUSSION.

Miss BUCKLAND wished to know whether the Admiralty Islands were included in that which is called the Louisiade Archipelago, as the Bath Museum possessed beads and shell breastplates and ear ornaments from the latter, very similar to those exhibited from the Admiralty Islands? She also wished to know whether the women were the cultivators of the *taro* which Mr. Moseley spoke of as grown in the islands?

Professor ROLLESTON, after expressing his gratitude to the author for the great amount of facts, and especially for the exhaustive enumeration of the various points bearing on the affinities of the Admiralty Islanders, with which they had been favoured by him, compared the paper to the paper on the Aymaras, published some years ago by Professor David Forbes, and said that he hoped that it would be similarly published *in extenso* in the Society's Journal.

In reply to Miss Buckland's inquiry, the author of the paper said, that in geographical position, the Admiralty Islands are far distant from the Louisiade Archipelago, that is to say about 700 miles in a direct line. The whole of New Britain and New Ireland and nearly all Papua lie nearer to the Admiralty Islands than the Louisiade Archipelago, whilst the Solomon Islands lie at about the same distance as the Archipelago.

Nevertheless, there are many resemblances between the Louisiade natives and those of the Admiralty Islands. The best account of the Louisiade Islanders is to be found in Macgillivray's "Voyage of the 'Rattlesnake,'" London, Boone, 1852, Vol. I, p. 190, &c. Besides the resemblances in the shell, breastplates, ear ornaments, &c., mentioned by Miss Buckland, it may be mentioned that the Louisiade natives, like the Admiralty Islanders, carry their lime for betel chewing in "calabashes" (gourds), with carved sticks to spoon it out with. The Louisiade canoes seem to differ in form from those of the Admiralty Islands, and I could find no resemblances between the two languages. The native women were more or less scared during the visit of the "Challenger" to the Admiralty Islands, and hence it was not observed whether they cultivate

* Labillardiere, *l. c.* p. 272.

the taro or not; but there can be little doubt that such is the case, as at Fiji and throughout Melanesia.

The PRESIDENT.—I have to say simply, that I am delighted to hear this paper read, on account of the attention that is paid in it to minutiae and the evident accuracy of the observations which the author has made upon these, I may say, almost newly discovered tribes, because I believe that no European has before landed on the Island. When travellers indulge in generalities, as is commonly the case in their description of savage races, they speak of things which all people in the same stage of culture share more or less in common, and which are, therefore, of little use to the anthropologists, but when, as in this case, detailed descriptions are given, we are able to trace connections, and here we can perceive, off hand, some resemblances between the arts of the Admiralty Islanders and other races without giving to the paper that more careful attention and study which anthropologists will devote to it in times to come. In the first place as regards stature; we see in the averages given, viz., 5 ft. 5 in. for the men, and 5 ft. 1 in. for the women, that there is not that great difference between the males and the females which Professor Rolleston and others have noticed as characteristic of the Andamans, for example, and some other savage tribes, the difference is no greater than would be found amongst ourselves. Then the observation that the children are fairer than the adults is an important one, because I think naturalists will be generally inclined to regard the children as the more probable representatives of the ancestors of the people in regard to colour; at any rate it will be a point for further consideration. I should like to know whether Mr. Moseley observed any difference between the coast tribes and those of the interior. [The Author replied that his observations were confined to the coast tribes only.] The diameter of the spirals of the curls of hair appears to me to be a new and interesting observation, because the spiral in all probability depends on the section of the hair; the more oval or tape-like the section, the closer probably the curl; therefore in the absence of any means of examining the former microscopically, the latter may be taken as typical of the class. The uniform growth of the hair over the scalp and not in patches, tallies with the most recent observations upon Papuan heads. [The author here remarked that although the hair grew uniformly over the scalp, it appeared to grow in patches upon some parts of the body.]

The mode of drawing attention by hissing strikes one as being very universal, and seems to have been adopted independently by many people, no doubt as being the best means of drawing attention without making use of any articulate sound expressing any definite meaning, much in the same way that we whistle to call a cab, or hiss in many parts of the continent of Europe for the same purpose. The continuous loop coil ornament designed upon one of the gourds exhibited is a class of ornament which is common in Assam, and all that part of the continent of Asia, and which I believe to be the pattern from which all those broken coil ornaments which are so

markedly characteristic of New Guinea and New Zealand ornamentation have been derived, and the observation that in the Admiralty Isles different patterns are employed for different classes of objects appears to me important, as tending to show that the patterns have migrated with the objects upon which they are drawn, and the well known conservatism of savages has no doubt been a means of keeping up their association with those objects only. The shapes of the obsidian spear-heads formed, as the author says, just as they happened to flake off, are interesting as showing the natural origin of such forms, and the remark that the spear-heads are used as knives reminds us of like customs in Africa, where the Kafirs, the Watusi described by Grant, the Fans of the Gaboon, and others, use their iron spear-heads in a similar manner, and which accounts for the form of knife and spear-head amongst savages being so commonly the same. One form of obsidian spear-head I notice amongst the objects exhibited, which consists of a sharp flaked edge on one side, and a chipped edge on the other. Such forms are common amongst the prehistoric flint implements found in Europe, and are usually called knives, because they somewhat resemble one of our ordinary penknives, having a thick back and a sharp edge, but we here see it used as a spear-head, and we observe that the chipping is simply intended to produce symmetry.

Amongst survivals it is most interesting to observe the wooden spear-heads painted black, in imitation of the obsidian blades, and the charm consisting of a human humerus, preserved and bound round as a trophy of the slain, has been imitated in wood by some one who could not obtain a genuine bone, reminding us how, after the Crimean war, gold bullet pendants to bracelets, introduced originally to contain a bullet extracted from the wound of some friend or relative, came into fashion, and were worn for some time by people who had no associations of the kind, like causes producing like results all the world over, amongst people in the same condition of culture. Many of the objects exhibited and the account given of the arts of the Admiralty Islanders generally connect them with those of New Guinea, as described by Dr. Comrie. Amongst these descriptions may be noticed the skulls fastened to the posts of the houses, the betel spoons, the Jews' harp, pan-pipes, and the circular shell ornaments, having curved tortoiseshell patterns attached, all of which occur in New Guinea. The practice of shaking the lance before throwing it has been described in Australia and other places, where darts are used. The particular class of outrigger canoe described by the author as existing in these islands, consisting of an outrigger on one side, with a counterbalancing platform on the other side, not touching the water, is used also in other places. In Samoa we find the first idea of this *weather platform* described by Wilkes. It consists, there, of a simple boom, rigged out on the side opposite to the outrigger, on which the men run out when the outrigger is pressed into the water by the wind, and counterbalance the boat by their weight. It is described also in some of those from the Solomon Isles and parts of New Guinea, and its

distribution led me in a paper which I wrote upon the subject in the 4th volume of this Journal (p. 430), to conjecture that it would be found in some of the islands to the north, which now turns out to be the case.

The absence of the bow in the Admiralty Isles accords with the view I take of the distribution of this weapon, believing it to have spread over a continuous area in the Pacific, and to have missed certain islands. To the best of my belief, though it is dangerous to go upon negative evidence in such matters, it is not used in New Britain or New Ireland, but it is used in Malayta, to the south of the Solomon group; also in Santa Cruz,* and in all the islands of the New Hebrides and Loyalty group, which is its most southern limit. From thence it is found eastward in most of the islands of the Pacific. Westward we have it throughout New Guinea, and at Cape York, where it is derived from New Guinea. [Mr. Moseley observed that he had been at Cape York, and it was certainly not in general use by the natives there.] Col. Fox continued: I am glad to be informed by the author upon this point; it is certainly known there, as we have it from many authorities, and I have both bows and arrows in my collection which have been obtained from Cape York. They resemble those of New Guinea, both in the shape of the bow and arrows, and the strings of rattan, and the fact of their being but little used, shows only that it is not indigenous, but has been introduced, which I believe to have been the case in many of the Polynesian Islands, a fact which is confirmed also by the name for it, *panna* or *fanna*, being common to many of the islands. It is very important to trace the distribution of this and similar arts. If, as has been suggested by some, the bow was originally universal in the Pacific, and has been discontinued in some of the islands, owing to the absence of large animals and the disuse of hunting, then there would be no reason why the distribution of the bow at the present time should be continuous. I have endeavoured to trace the distribution of the use of the notch for the string at the base of the arrow; unfortunately travellers can seldom be induced to make the detailed observation necessary. The present paper is, however, a great exception to this general defect, and the Institute is much indebted to Mr. Moseley for it. The mention of the fortifications in the Admiralty Isles is of interest. I should be glad to know if Mr. Moseley noticed the use of flanking defence in any of these works; probably from the absence of missile weapons it would not be used. [Mr. Moseley said he had not noticed flanking defence in any of them, but his attention had not been especially drawn to the point.]

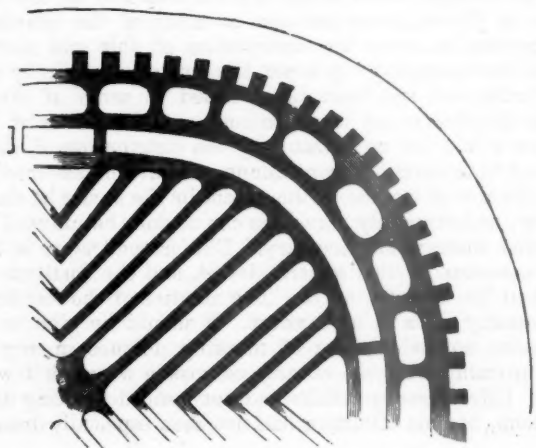
In reply to the remarks of the President, the author tendered his thanks to the President and Society, for the kind manner in which his paper had been received. With regard to the question of coast and inland tribes, the author stated that his observations had been

* From Commodore Goodenough I received arrows obtained by him from Mallicollo, Erromango, Santa Cruz, and Malayta.—A. L. F.

entirely devoted to the coast natives, and that he considered it very possible that no regular inland tribes existed.

The continuous loop coil ornament referred to by the President occurred upon a chunam gourd from Humboldt Bay, and was not observed at the Admiralty Islands. The charm in which a human humerus is replaced by a carved piece of wood made to resemble it, was regarded by the author of the paper as possibly rather an instance of a deliberate attempt on the part of a native to impose upon his fellows, and make them believe that he had secured the real trophy, than as an instance of survival. With regard to Cape York it might be well to remark that savage weapons from all parts of Melanesia and Polynesia, and from Papua, were constantly being brought thither by pearl shelling vessels and small traders, and that they were bought up by such whites as the police in the barracks established at the port, and by them re-sold, mingled together, to visitors.

P.S.—Since the reading of the paper, the attention of the author has been called by Colonel Lane Fox to the existence of almost exactly similar shell discs, with tortoiseshell fretwork ornamental laminae upon their faces, to those of the Admiralty Islands in several other places; and he has been kindly shown specimens of these by Mr. Franks, at the Christy collection. Specimens in the collection from two localities have been kindly sketched by Captain Harold Dillon, and woodcuts of them are here appended. In one of these,



brought by Dr. Comrie, from N.E. coast of New Guinea, the shell disc is concave on the surface, on to which the tortoiseshell plate is fitted. The plate must have been softened by heat, in order to make it fit evenly on the curved surface. Several similar ornamental discs, but flat, as at the Admiralty Islands, are in the Christy collection, from the Solomon group. The fretwork patterns in the tor-

toiseshell are far more delicate and elaborate than are the Admiralty Island ones. One of these patterns is figured in the woodcut. It is most extraordinary that exactly similar ornaments are in use at



the far distant Marquesas group, and a fine specimen of one fitted on a head-band, is in the Christy collection. In it the disc, which in the Admiralty and Solomon Island ornaments is made of ground *Tridacna* shell, is replaced by a disc of mother-of-pearl shell. In all the tortoiseshell disc is fastened to the shell disc by means of a cord, with a knot passed through a hole drilled in the centre of both discs.

The paper was illustrated with maps, drawings, &c., and a large collection of weapons, &c., from the islands were exhibited.

Since the above paper was read, an account of the anthropological observations made by Cap.-Lieutenant H. Strauch, of H.M.S. "Gazelle," has appeared.* The New Hanover Islanders differ from the Admiralty natives to a greater extent than was to be expected. The men wear no covering to their generative organs at all. They wear their hair much more elaborately dressed than the Admiralty Islanders. They wear no cicatrizations or tattooing. They have much more elaborate wood carving in the shape of masks worn on the top of their heads in dancing, &c., and their canoes have elaborately carved prows, and are different from the Admiralty canoes. They have no bows and arrows, and no defensive weapons, but have clubs,

* Allgemeine Bemerkungen Ethnologischen Inhalts über New Guinea, die Anachoreten Inseln, New Hanover, New Ireland, New Britannien und Bougainville, von H. Strauch, Capitain-Lieutenant. "Zeitschr. f. Ethnologie." Bastian u. Hartmann, 1877, Hft. I, s.g.

besides lances. The lances have wooden or bone points. They make them quiver before throwing them. They have no carved bowls like the Admiralty natives. The natives of that part only of the island nearest to New Ireland chew betel, and, unlike the Admiralty Islanders and Humboldt Bay men, they carry their betel and lime in bastbags, not in gourds. They have no temples. They have apparently no sago, but have yams, which the Admiralty Islanders have not. They use the same musical instruments as the Admiralty natives, and wear similar shell and tortoiseshell discs on their breasts, and sometimes a larger disc of this kind is mounted as a breast ornament on a band, with a series of smaller similar discs on either side of it, the ornament thus coming curiously near the Marquesan one. They pallisade their villages, and their better houses have the walls constructed as in the Admiralty Islands, of built up billets of wood, which Captain Strauch thinks may possibly act as stores of firewood as well as walls. The commoner houses are all roof, like many Admiralty ones. The Anachorete Islanders do not wear the ovulum shell. They have only lances as weapons. They have certain houses specially decorated, and with human figures carved in wood placed before them, probably temples.

Captain Strauch's paper is to be continued.

DESCRIPTION OF PLATES XX, XXI, XXII, AND XXIII, ILLUSTRATING THE PAPER ON THE INHABITANTS OF THE ADMIRALTY ISLANDS.

Plate XX.

Fig. 1.—Fore end of lance, with large obsidian head mounted in a socket piece, which is perforated. Elaborately ornamented.

$\times \frac{1}{8}$.

Fig. 2.—Fore end of short javelin, with irregular obsidian point.

$\times \frac{1}{4}$.

Fig. 3.—Sheath made of plantain leaf, used as a cover to the obsidian lance heads.

$\times \frac{1}{8}$.

Figs. 4 and 5.—Lance heads of obsidian, to show the curiously bent and contorted forms which, produced by accidental flaking, are nevertheless mounted as serviceable weapons.

$\times \frac{1}{8}$.

Fig. 6.—Obsidian lance head, showing a still wider departure from the typical form.

$\times \frac{1}{4}$.

Fig. 7.—Lance head, with the whipping of twine and coating of cement removed to show the manner in which the obsidian flake is inserted in a socket piece, and the socket piece is spliced on to the lance shaft.

$\times \frac{1}{4}$.

Fig. 8.—Diagrammatic drawing of the socket piece.

b. Wedge-shaped slot for the reception of the fore end of the lance shaft which is cut to fit it.

c. Cavity hollowed out for the reception of the base of the obsidian flake.

a. a. Slots cut in the walls of this cavity to facilitate its being scooped out.

Fig. 9.—Obsidian lance flake removed from its socket to show the simply rounded outline of its base.

Fig. 10.—Fore end of a lance, with shaft of reed and head of hard wood. The head is painted blackish to resemble obsidian.

$\times \frac{1}{8}$.

Fig. 11.—Hatchet with ground triangular shaped blade of basalt, mounted by being jammed in a cavity at the end of a club-shaped roughly hewn piece of wood. The mounting of this specimen was made on board the "Challenger," being copied from the only such specimen obtained. $\times \frac{1}{8}$.

Fig. 12.—Blade of the foregoing.

Fig. 13.—Half-moon shaped piece of mother-of-pearl shell, with edge ground sharp, used as a knife, &c. $\times \frac{1}{4}$.

Fig. 14.—Gourd used to carry the shell lime used in betel chewing. Perforated at the stalk end for the stick or spoon. Ornamented with patterns burnt in upon its surface. $\times \frac{1}{4}$.

Fig. 15.—Carved head of large hard wooden lime stick or spoon. This belonged to the Chief.

Plate XXI.

Fig. 1.—Disc of ground Tridacna shell, with a second disc of thin tortoiseshell secured on its surface by means of a knotted string passed through a hole in the centres of both. The shell disc is ornamented with engraved lines at its margin. The tortoiseshell disc is perforated with a fretwork pattern. Worn on the forehead or breast. $\times \frac{1}{8}$.

Fig. 2.—Disc of tortoiseshell from similar but larger ornament, to show the pattern. $\times \frac{1}{8}$.

Fig. 3.—Similar ornament to Fig. 1. $\times \frac{1}{8}$.

Fig. 4.—Comb worn by the men with long hair. The teeth are separate pieces of hard wood set in a mass of cement and twine. $\times \frac{1}{4}$.

Fig. 5.—Pan-pipes. $\times \frac{1}{4}$.

Fig. 6.—Armlet of plaited black and yellow coloured material. $\times \frac{1}{8}$.

Fig. 7.—Charm composed of human humerus, bound round with eagles' feathers. Worn suspended round the neck and hanging down the back. $\times \frac{1}{4}$.

Fig. 8.—Adze with blade consisting of half a ground *Terebra maculata* shell. $\times \frac{1}{2}$.

Fig. 9.—Adze blade made of ground *Hippopus* shell. $\times \frac{1}{2}$.

Fig. 10.—Knife consisting of obsidian blade in wooden handle. $\times \frac{1}{2}$.

Fig. 11.—Beads of ground shell and some black material. $\times \frac{1}{2}$.

Fig. 12.—Fish hook made of ground *Trochus* shell. $\times \frac{2}{3}$.

Plate XXII.

Plans and sections of an Admiralty Island canoe and gear, drawn to scale.

Fig. 1.—View of the outer surface of the canoe from the side, showing, below, the hollowed-out body, above which is the single line of plank surmounted by the rounded gunwale piece, the lashings of which are indicated. At the ends are seen the solid end pieces with their single row of ovulum-shells as a decoration. The positions of the supports of the inclined outrigger are shown by three broken struts. The square heads of the thawts and outrigger-booms are seen projecting under the gunwale-piece. The hull is coloured white, the end pieces and ends of the thawts and outrigger-booms being reddened.

Fig. 2.—Plan of the canoe as seen from above. The planks forming the deck are shown lashed *in situ* only on the inclined outrigger, which is necessarily from its inclined position here foreshortened. The struts supporting this outrigger rest against the inside of the canoe, and are kept down by being passed under a longitudinal stay which is lashed to the ends of the booms of the main outrigger, inside the canoe, for the purpose. The thawts *a, a*, have their outer ends dovetailed into slots cut in the upper edge of the plank streak, and are secured in position by the gunwale-piece above them. The inner ends of the booms of the main outrigger are secured in a similar manner. Struts *b, b*, are fitted in at intervals, which prevent the collapsing of the hull, and strengthen it, and specially strong ones are placed beneath the outer booms of the main outrigger. An extra gunwale-piece is secured over the region of insertion of the outrigger-booms. The main outrigger-booms are steadied in most canoes by two short additional booms and a cross-piece, as shown in the figure, but this additional strengthening is not always present. At about half the entire length of the main outrigger-booms from the canoe a cross-piece is lashed, and it is at the fore end of this cross-piece at the point marked *A*, that the end of the stay-boom of the mast is shipped. The float is secured at a short distance from the ends of the outrigger-

booms. When the canoe is in use the main outrigger-booms are decked with planks from the canoe-hull as far as the cross-piece A.

Fig. 3.—Transverse section through the canoe in a line with one of the outer booms of the main outrigger to show the amount of inclination of the inclined smaller outrigger.

b. The stout strut fitted under the outer boom of the main outrigger.

Fig. 4.—(a.) Thawt showing the dovetailed ends which fit into the slots in the hull and the flanges which rest against the inside of the canoe.

b. One of the struts seen *in situ* in fig. 2. The dotted lines show another form sometimes used.

Fig. 5 shows the means of attachment of the ends of the booms of the main horizontal outrigger to the float. The float is of soft wood (*Hibiscus* or *Thespesia populnea*?). Rows of short sticks of hard wood are driven into the upper surface of this float, being arranged in rows, crossing one another alternately crosswise, and being securely lashed with twine in this position. A rest is thus formed in the upper part of the + where the end of the boom is secured by lashing.

Fig. 6.—Mat sail with its two yards rolled up. Above this the stay-boom with its forked end, into which the tip of the inclined mast is received. Above this again the mast with a hole at one end for the haulyards.

Fig. 7.—Ordinary paddle of one piece, and unornamented. Above this a steering paddle of two pieces and spade-shaped.

Plate XXIII.

Figs. 1, 2, and 3.—Heads of natives taken from photographs. Fig. 2 wears a cap of *Draccena* leaf, and has a shell adze over his shoulder.

Figs. 4 and 5.—Upper and under views of ovulum ovum shell worn upon the penis. The shell has diagonal and rectangular patterns engraved upon it. The inner whorls are cut away in such a manner as to leave a sharp cutting edge bounding the narrow opening of the shell, into which the glans penis is introduced. This is seen in Fig. 5. $\times \frac{2}{3}$.

Figs. 6 and 7.—Views of opposite faces of stone club from Hilo, Hawai Island, Sandwich group. $\times \frac{1}{3}$.

Fig. 8.—Triangular section of the fore part of the same.

NOTE by H. N. MOSELEY on a STONE CLUB from the SANDWICH ISLANDS, exhibited by him at the Meeting.

THE stone club now exhibited was obtained by me at a native house at Hilo Hawai Island, Sandwich Islands. I asked the natives to search for any stone implements they could find, and they found this after considerable hunting. They told me it was called "pohaku newa," which means stone club, and that it was used in fighting to strike blows on the head, being fastened to the wrist with a thong or string.

The object appears to be of an altogether new and undescribed form amongst stone weapons. It is made of basalt, with ground surfaces. It is 10 inches in length. It is cylindrical in form at the proximal end, which is grasped in the hand, and tapers towards that end, which is drilled with a hole for a thong. Towards the other end the weapon becomes gradually triangular in section, from being circular, and ends in a point formed by the meeting of three curved but even surfaces, which where they adjoin laterally form three sharp edges.

The club is of especial interest, because it resembles the New Zealand mere, in being a stone club used in the hand without mounting, and being fastened to the wrist by a cord passed through a hole drilled in the handle end. The mere of course differs in its flattened form, but the ideas are the same, and the existence of this Hawaiian weapon seems to add another link between the Polynesians and their distant offshoot the New Zealanders.

Mr. J. Park Harrison then read the following report on some recent excavations in Cissbury Camp :—

REPORT on SOME FURTHER DISCOVERIES at CISSBURY. By
J. PARK HARRISON, M.A.

A QUANTITY of chalk, and part of the railing round the pit that was excavated by Mr. Ernest Willett in 1874, having fallen in during the winter of the following year, a rock sill or step, 5 feet 6 inches in length, was exposed to view, 14 inches above a ledge already known to exist in the solid chalk rock, on its eastern side, 9 feet below the surface of the ground.

The slip occurred at the spot where a steep slope of loose chalk had afforded means of access to the pit eighteen months ago,* and the chalk at the back of the chasm produced by the accident, now seen in section, indicated unmistakably that it was part of the filling in of another excavation. The "step" itself

* See Journal, Vol. VI, p. 263.

was covered with a thick seam of red clay, from which numerous flakes cropped out.*

As it was of real importance, owing to the occurrence of distinctive marks on the walls of Mr. Willett's pit, that the relative ages of the two excavations should be ascertained, and a careful search made for anything that might confirm, or otherwise, the antiquity of the characters alluded to, the discovery that had been made was at once communicated to Major Wisden, who readily consented to postpone the filling up of Mr. Willett's pit, which had been decided on, and also promised himself to assist in the new exploration so far as his engagements permitted.

Subsequently Mr. E. W. Brabrook, F.S.A., and Captain Harold Dillon, F.S.A., Directors of the Institute, were able successively to devote several days to the work; and the proposed exploration at Caburn having been put off to another year, owing to Colonel Lane Fox's pressing official duties, the excavation at Cissbury was undertaken by us, and adopted by the Exploration Committee as supplemental to the work which had been carried on earlier in the summer at Seaford.

Operations were commenced on October 4th, on which day three of Mr. Ballard's principal workmen, who had been engaged in the excavations under Colonel Lane Fox last year, were directed to employ the early hours in clearing out a trench in the *débris* that had accumulated in Mr. Willett's pit, along its eastern side, to see whether any galleries ran under the adjoining excavation. Whilst so engaged, part of the rock face, which had probably been shaken by the fall of chalk from the "step" above it, gave way, and revealed the existence of a cave 5 feet 6 inches in width, clearly belonging to an adjoining pit. The roof had partly fallen in, and on looking through the aperture we ascertained that the space above was filled with chalk rubble, which had formed itself into a natural dome or vault. Half of a rude flint implement, which when perfect may have measured 8 inches in length, and a minute fragment of bone, apparently a portion of the thinnest part of the scapula of deer, were the only remains that were found amongst the blocks of chalk in the cave.

Immediately adjoining, on the south side, a short gallery ran from Mr. Willett's pit in an easterly direction, widening, at 4 feet from the entrance, into a chamber 7 feet long and 5 feet wide, at the end of which was a small aperture in the chalk rock, 10 inches long by 5 inches high. This was the "window"

* Mr. Willett, who did not wish to undertake any further excavations himself at Cissbury, mentioned that he noticed in 1874 a floor of red earth at a depth of 5 feet from the top of his pit; and also another 8 feet from the bottom. The latter would appear to have been due to the silting which poured in over the "step."

which Mr. Willett had supposed might perhaps have been used for communication with the occupants of another shaft.*

The excavation of the new pit was now proceeded with, great care being taken to follow the seam of red clay already alluded to, as well as all other indications of natural or intentional filling in. The following summary of the work accomplished on this and the following two days, during which he was present, is derived principally from notes taken by Mr. Brabrook.

The pit, so far as disclosed at this date, presented the following features:—

1. At the top, a filling in of chalk rubbish, intermixed with large blocks, some of which approached to within 6 inches of the surface.

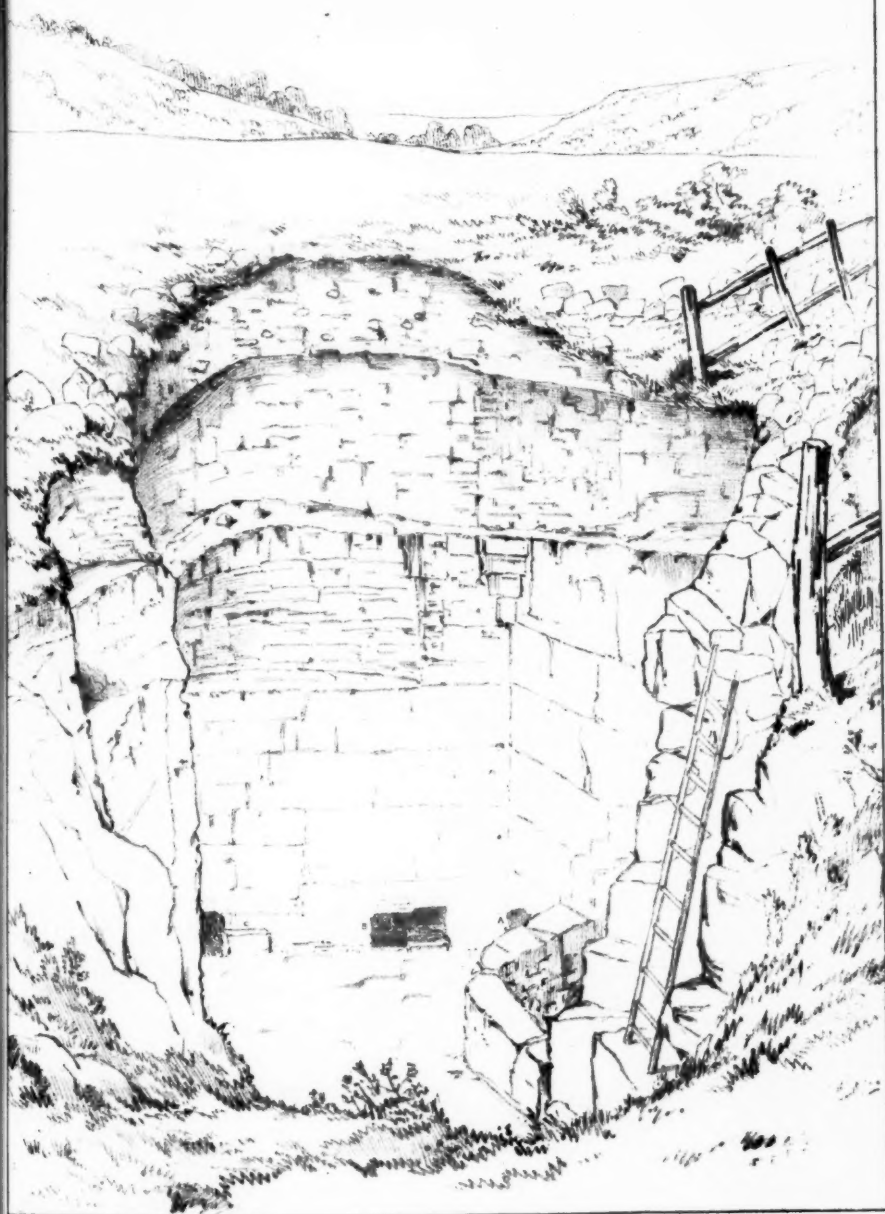
2. A layer of red clay reaching from the top of the pit, at its eastern side, and slanting down to the level of the step into Mr. Willett's pit. In this clay we found abundance of flakes of all sizes, and several rudely fashioned flint implements. They were mostly between the step and the centre of the pit. Only one piece of stag's horn was met with above the 10 feet level.

3. Under the red seam there was the usual filling in, consisting of angular chalk.

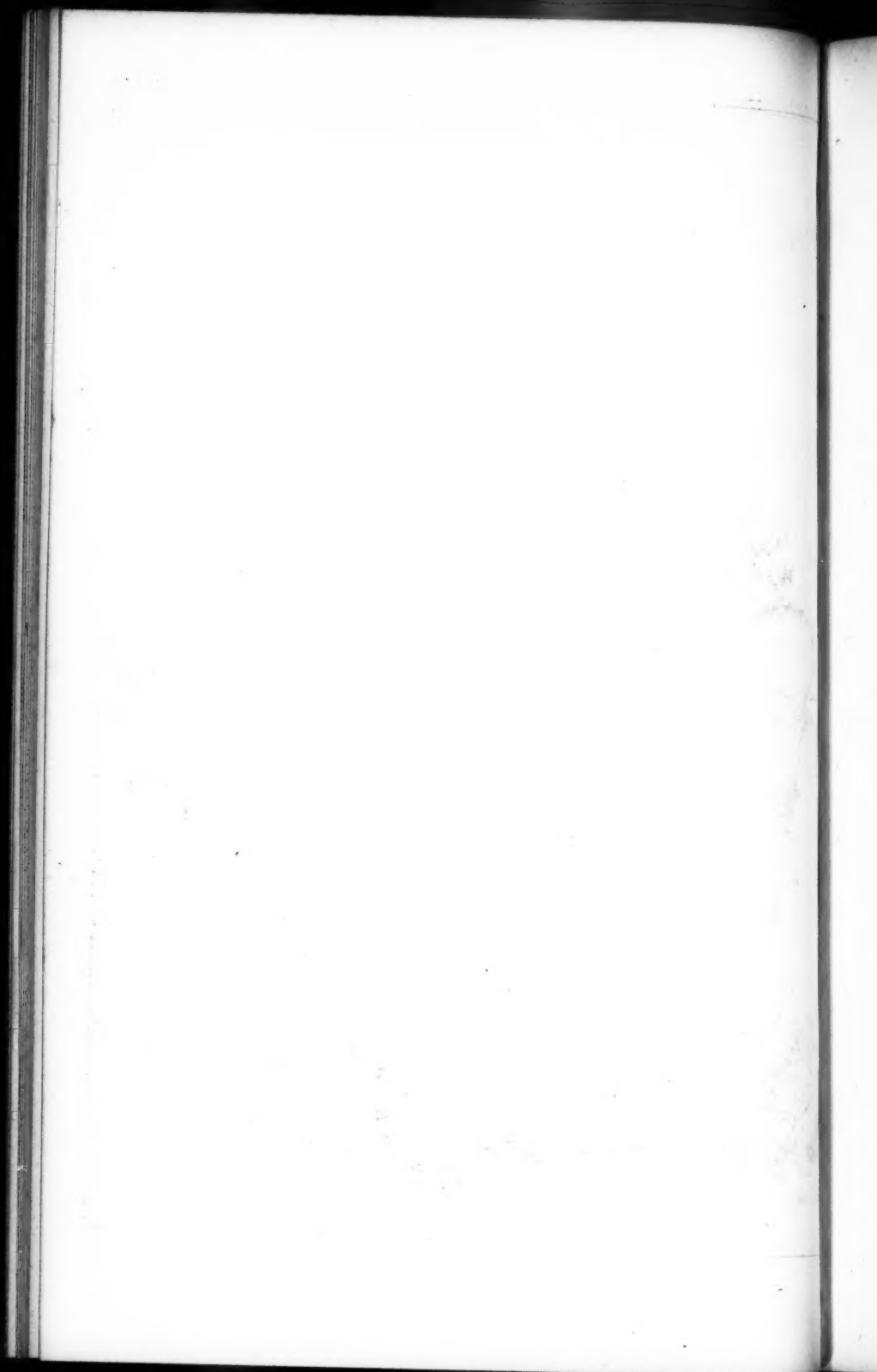
The shape of the upper half of the pit is peculiar. At the eastern side is an apse, 10 feet wide, along which, about 9 feet below the surface, there is a platform, 3 feet deep in the widest part. On the south, separated from this main stage by a narrow ledge 10 inches in width, there is another platform or recess, 5 feet 6 inches in length and 3 feet wide in the centre. A curious projection like a square pilaster or buttress, descends from the southern extremity of the apse, and it was afterwards found to stop near the level of a second stage 5 feet 6 inches below the principal platform, and immediately under it. The whole width of the pit (including two recesses subsequently excavated on the north side, opposite to the recess on the south) is 20 feet, and the breadth from the step to the east wall of the apse 17 feet 6 inches.

Several of the blocks of chalk that formed part of the filling in of the pit bore marks, some of which may perhaps have been the work of insects. Two or three, however, seemed to deserve more attention. They commenced with a small bulb, and continued in a line, as if some tool had been first pressed into the chalk, and then drawn evenly along it. One of the blocks appeared to bear even stronger evidence of design, for the marks

* Two or three blocks of chalk appeared to have been put on one side by the workmen in this gallery; one of them was marked with a straight line terminating at both ends with a small circular indent. A similar mark was found in the second escarp pit.



CAVE PIT, CISSBURY.



were arranged parallel to each other, and showed such difference of character as might lead to the supposition that they had some definite meaning. (Pl. xxv, 5.) The block itself was stained both in the marks and on its surface by percolation from the red seam; and, it should be added, had escaped the notice of the workmen, owing to the above cause, and the faintness of the characters. It was thrown out from a depth of about 5 feet at the north-east corner of the pit.

On the west an angular mass of chalk rock projected into the pit to a distance of 7 feet, and, as we proceeded with the excavation, advanced eastwards in irregular and narrow rock steps. It was beneath this abutment that the cave we had accidentally discovered still lay concealed, under the chalk rubble that covered it in common with the lower half of the pit.

Having broken off work for a week, on resuming, the chalk was by degrees carefully removed from the neighbourhood of the projecting rock, most of the loose rubble which covered it being for the present left undisturbed in order to preserve intact a seam of fine white concrete 3 or 4 inches in thickness, which appeared to slope from a point 2 feet or so below the step at an angle of about 45° or 50° .

Blocks of marked chalk continued to be turned up. They had a variety of figures on them, and were found almost exclusively near the east wall, and at the south-west corner of the pit. *None were met with below a level of 15 or 16 feet.*

One of the most curious of these blocks was afterwards lost.*

On the east side of the pit we noticed numerous well shaped unbroken flints; 40 were collected in a space of about 2 square yards. They were found at a level of from 12 to 15 feet below the surface; and the only well finished implement in the whole pit was lying near, and appeared to be associated with them. It could hardly have been an accident also that, at a distance of two or three yards to the west, there were a number of useless flints with long fingers and excrescences. They appeared to have been sorted and thrown aside. It seemed to show that the pit was used whilst gradually filling up by degradation from the walls, though no trace existed of a trodden floor such as Mr. Willett noticed half way down the adjoining pit, where, however, there had been a deposit of red clay. If at this period no care was taken to keep the pit clear of chalk *débris*, the flints may have been accidentally buried.

Charcoal, which was first noticed about five feet east of the step, at 12 feet from the surface, was met with in increasing quantities in the white seam as it approached the south and east

* It had been placed on a ledge with other blocks, but could not afterwards be found. It may have fallen into the pit.

sides of the pit, at a level of 16 feet: and it was here that the only two pieces of deer's horn, of any size, were exhumed. They lay about six feet apart, and appeared to have formed part of one antler.

From this level to the floor of the pit, the plan followed the rectangular formation of the chalk rock. It consequently lost the amphitheatre appearance that it had displayed when seen from the surface (see Pl. xxiv). The width at the 20 ft. level was 14 feet 6 inches, and the length 14 feet 9 inches.

The first gallery that was uncovered was near the E.S.E. corner. Over the entrance, which was 2 feet 6 inches in height, and 4 feet wide, Captain Dillon, who was now at Cissbury, and near the spot at the time, noticed several lines or scores. They were of precisely the same light yellow tint as the chalk rock itself, which had also been remarked in the case of the characters found in Mr. Willett's pit; but they did not seem, as those were, to have been made with a flint instrument. The marks were arranged in two rows; the upper one consisted first of six vertical lines, followed after a blank space of $4\frac{1}{2}$ inches by four more lines, the last of which was irregularly curved. From two of the lines (the second and sixth in this upper row) a branch stroke inclined upwards at an angle to the right (see Pl. fig. 7). In the second row, there were four vertical lines, and three of these also appeared to be compound. The marks were well protected in a deep recess formed by the corbelling over of the chalk rock. The gallery, at the entrance of which they occur, is marked C.

In addition to the above marks, on the west jamb, just within the gallery, were two perpendicular lines of equal length. And on the left side of the entrance, on the outside wall was a long deep cut, and several finely incised branching lines.

Whilst proceeding with the excavation along the south side of the pit, two more galleries (marked A and B) were discovered by the workmen before we arrived on the hill. Over the entrance of gallery B, which ran in a remarkably eccentric course to the S.W., there was also a set of marks scratched upon the wall. They consisted of three horizontal and nearly parallel lines of unequal and gradually decreasing length, the upper one, or longest being 1 ft. 1 ins., and the second and third 11 ins. and 10 ins. respectively. These marks were made apparently by some bluntly-pointed instrument. A detached block of rounded chalk which was lying just inside of the gallery B, was scored with lines deeply cut with a flint; but they had no distinctive character, and we at first thought that they had been made by the shovel of one of the workmen. The third gallery (A) ran south from the corner of the pit. The chalk at the entrance



1/2 the size of Blocks

MARKS FOUND IN CAVE PIT, CISSBURY.

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was much disrupted, and there were no marks to be seen. Six feet within it we found the little window alluded to as existing at the east end of the cave in Mr. Willett's pit; and near to it there was a small horn pick in excellent preservation. It was the only instrument of the kind found in the excavation.

A considerable quantity of charcoal was met with in the chalk seam at about 4 feet from the south and east sides of the pit, at a height of about 4 feet from the floor. It was not found near to the walls, except on the south side opposite to the entrance of gallery B, where we came upon a hearth or fire-place, formed of large blocks of rounded chalk, which were much calcined and blackened with smoke. They formed part of a wall of rubble, which ran for a length of several feet in a line nearly parallel to the south wall of the pit, and was capped with the white seam already alluded to. A piece of stag's horn, 10 inches long, burnt and blackened at one end (indicating that it had been used to stir a fire), was found in the chalk *débris* close to the fire-place.

On continuing the four-feet trench along the east side of the pit, two more galleries were discovered (D and E). There were no marks visible at the entrances or upon the walls inside. In gallery E Captain Dillon found a piece of hard stone $5\frac{1}{4}$ inches long by $2\frac{1}{4}$ inches thick. It was of a quartzite nature, similar to one found by Mr. E. Willett in his pit.

Several rude implements, worked to a point (one with a natural handle of unworked flint, 3 inches long) were turned up near the north-eastern corner. All the galleries were sufficiently free from chalk rubbish to allow of access almost to the end of them. Captain Dillon was consequently able to obtain their dimensions without any great difficulty, by simply moving on one side the larger blocks that had fallen from the roof. Time did not permit us to clear out the *débris*, which may perhaps conceal much that would be interesting and important as regards the history of the pit. In a branch-gallery running northward from the gallery E—the only one that was thoroughly explored—Guiles, our foreman, found two rude but effective flint instruments, with wide cutting edges, and unworked handles, and a scapula of deer.

In the right, or south branch of this gallery (E) we noticed a feature that has not been seen elsewhere. About 10 or 12 feet from the end there occurs an abrupt alteration in the height of the roof, and on the vertical face of the rock, which forms a pseudo-lintel across the gallery, there were three fine holes, showing that it had been intended to carry on the excavation to the end at the same level of ceiling, but for some reason the work had been discontinued. A good deal of broken chalk

which it was difficult to remove on this occasion, prevented further exploration, and the question must remain at present unanswered, for what purpose this extension was made at a height so inadequate for the work of extracting flint.

At the north-east corner of the pit we uncovered the entrance to the 6th gallery (F). It appeared to have been purposely closed with two large blocks of chalk, so firmly wedged into the opening, that it was necessary to hack them to pieces before they could be removed. It was at first difficult to decide whether there had been any aperture. On removing the blocks, however, Captain Dillon found a cave which opened into a spacious chamber 11 feet in diameter, and 5 feet high. It was almost clear of rubble, excepting at the west side, and communicated by a gallery 20 feet long with one which ran N.N.E. from Mr. Willett's pit. These two galleries, and the "Dome" chamber were cleared out in 1874 by his workmen.

The remains of a bat, which had doubtless obtained access by these galleries, were found in the dome-chamber, and also part of the cover of a "Bradshaw's Guide," dated "Sept. 1875." The galleries intersected at a point about 16 feet from their respective entrances; and the hole between them had all the appearance of having been the result of accident.

The existence of the cave under the projecting rock having been ascertained at the commencement of the excavations, and every care taken to preserve any original features connected with it, we now commenced the work of clearing the white seam from off the chalk rubbish with which it was still more or less covered. It had been preserved to the last moment in expectation of a visit from Colonel Lane Fox; but at length it became necessary to break it up in order to proceed with the excavation. Whilst this was being done, with great care (much of the chalk concretion being removed by hand), the important discovery was made that the blackened chalk blocks at the back of the hearth formed part of a rubble wall, which had been built for the purpose of filling in the original entrance to the cave. On each side the chalk rock, though barely twelve inches thick, still remained *in situ*, and formed the east and south sides of the cave: the walls were a little over three feet in height. A kind of burrow through the chalk rock, 1 ft. 6 ins. wide, and 1 ft. 3 ins. high, had apparently been made in place of the old entrance, quite in the corner of the pit, close to gallery A. As a number of broken flints and pieces of chalk rubble filled the aperture, it may be assumed that they were placed there after the roof of the cave had fallen in, and the passage rendered of no further use.

The cave was found to be 7 feet long and 5 ft. 6 inches wide.

On the north, and partly on the west sides, the chalk rock still partly covered it; and this was so on the south-west side also, before we cleared away the loose chalk, which had fallen in when removing the white seam: the jar perhaps caused a portion of the rock-covering to separate from the wall behind, along the line of cleavage; and owing to its fall, part of the south wall of the cave was broken down, and the passage above alluded to partly destroyed.

There now remained the north-west corner only of the pit to be explored; and it was whilst we were clearing away the chalk from the north side of the projecting rock, that Colonel Fox made his long wished-for appearance. A sufficient quantity of the white seam still remained in places to show the angle at which it originally sloped: and he was able to examine the site of the hearth, and the east wall of the cave, as well as a curious recess cut in the north side of the rock at a height of about four feet from the floor of the pit, 4 ft. 3 ins. in width, and 3 feet deep. It had just previously been exposed. Beneath it, we subsequently uncovered the entrance to a second cave. It communicated by a window with the dome-chamber, and appeared to lead into Mr. Willett's pit; some rubbish that had evidently been thrown in from the surface in 1874, being noticed at its western end. Being alone, and unable to stay longer at Cissbury, the point whether there was originally any communication between the pits had to be left for future examination. The entrance from Mr. Willett's pit had been concealed on that side by the chalk *débris*.

After protecting the walls of the cave and entrances to the galleries with blocks of chalk, the tent was struck which Mr. Ballard had kindly pitched for us, and the work was discontinued.

It would be premature to give any decided opinion as to the relative dates of the two pits. But there are some considerations which lead to the belief that Mr. Willett's was excavated some time after ours. 1st. Long galleries radiate from it in all directions, excepting towards the adjoining pit. The only gallery running eastwards stops short at a distance of 11 feet from the entrance—the south gallery from the adjoining pit cutting off further extension in that direction. 2nd. The red seam, which crossed the adjoining pit from its east or high side, entered Mr. Willett's pit at the level of the step. 3rd. The hoard of unused flints found rather more than half way down our pit, seems to point to a time when flints were being extracted from the galleries of Mr. Willett's pit: and 4th, the marks in the galleries of Mr. Willett's pit (assuming them to be genuine) appear to be of a later date than those at the entrance of the galleries in the adjoining pit.

The "Cave Pit" itself may be of an age intermediate between the smaller shafts in the ditch of the camp, and Mr. Willett's pit.

As regards the form of the flint implements, a large proportion, more than one-third of the whole number found in our pit (25), are of a type that is not common at Cissbury, viz., with one end sharply pointed; the other being unworked. One or two of the same form were found in or near the great pit, which it will be remembered was also sunk in stages, although there, the unusual size of the excavation, appeared to account for the plan.

No sling stones, or potsherds were met with in our pit, and no shells excepting *Helix nemoralis*, and these only about 4 or 5 feet from the surface. Also, with the exception of the scapula of deer found in gallery E, and two minute fragments of bone, not sufficient for identification, and the bone-implement with a rounded point, which may have been used for forming marks on the chalk, and was found about 12 feet down in the pit, animal remains were entirely absent.

It should be mentioned that there was no indication on the surface of the existence of the pit. This was accounted for by finding that a quantity of chalk had been placed on the site at a later date. Some of the blocks were of considerable size, and approached within 6 inches of the turf. They were mixed with a quantity of dark-coloured vegetable mould.

Flints had evidently been extracted from the galleries; but the floor of the pit being between 2 and 3 feet below Mr. Willett's, they were nearer the roof than in that and some other pits.

DISCUSSION.

Professor ROLLESTON said with reference to Mr. Park Harrison's views as to the marking on the chalk blocks from Cissbury, that he thought they might very reasonably be supposed to have been made by one of the savages in some moment of fidgetty restlessness, such as savages of all kinds were subject to. Taking one of the deer-horn picks into his hands which had a small and pointed brow-antler, he showed how easy it was to make similar marks with such an instrument upon the chalk blocks before them.

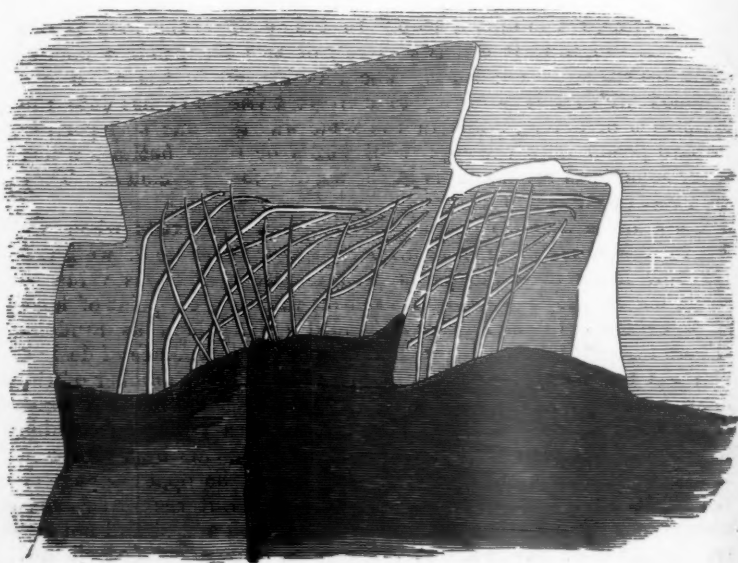
The PRESIDENT: As Mr. Harrison has again referred to the marks found upon chalk in this and other pits, and he appears still to hold to the opinion that some of them represent a written character of some kind, I think it is only right that, having been associated with him in some of these excavations, I should express clearly my dissent from his views upon this particular point. Any discovery of this nature would create such a revolution in our views of the condition of the early inhabitants of this country in the stone

age, that although we must, of course, be prepared at all times to receive new truths, we ought not lightly to accept an assumption so much at variance with all collateral evidence as would be the hypothesis that the people who made these shafts and galleries in search of flints for implements, were acquainted with writing. In my remarks upon Mr. Harrison's last paper, I expressed myself with all due deference to the undoubted sincerity of the convictions of my friend and colleague upon this subject, but since then in publishing the paper in the *Journal*, a postscript has been added at page 269, No. III, vol. VII, which, as I have not before had an opportunity of seeing, it appears to me to call for a more decided protest. In this postscript woodcuts are given, which profess to be representations of the marks upon the chalk. The marks are there represented in clearly defined black letter type, and as such must inevitably convey to any one who might read the postscript the impression that the originals were designed for some definite purpose. But if any one will compare these marks, as shown in the postscript, with the originals, some of which are preserved upon the chalk, and are exhibited this evening, he will at once perceive that all the sharp decision of outline which in the wood-cuts suggests the idea of written characters, are wanting in the originals, which in reality are merely the rounded impressions of the deer-horn tools with which the shafts and galleries were originally excavated. Take, for example, the five marks resembling commas on the 14th line; here the heads of the commas represent the spot where the tool first came in contact with the chalk, and produced a hole, whilst the tails represent the grooves formed by the tool, as it slipped away from the point of impact. Take also the second figure on the 18th line, resembling a loop. In the original, the loop is not joined at the top; it consists merely of two independent curved scratches crossing each other. The imagination of the artist has supplied all that is wanting to convert these scratches into the semblance of letters, much in the same way that one may portray in hard pencil lines the figures of heads or other outlines which fancy sometimes reveals to us in the fleeting forms of clouds. They are ideas based upon the reality rather than real facts.

I am quite sensible of the temptation which exists when we see, for the first time, marks uncovered after the lapse of we know not how many thousand years, to attribute a fictitious value to them, but all the scratches formed with the rounded point of horn show evidence of having been formed quickly and at random. Others formed with a sharp tool, however, show evidence of design, of these the monogram shown on page 264 of the number of the *Journal* above referred to, is evidently an intentional mark of some kind; but then its position at the entrance of a gallery, accessible to the public, renders it probable that it was made by a visitor in the same manner as the very obvious 16 on the opposite page or the name of *William Penfold* adjoining it. But the other ornamental scoring or chequed pattern formed with a flint and noticed on the sides of the shaft at the time it was uncovered, is un-

doubtedly to be attributed to the pre-historic workers. In my paper on Cissbury, at page 374, No. III, vol. V, I noticed a somewhat similar set of marks over the entrance to one of the galleries in No. 2 Escarp Shaft. But although I actually saw some portion of these marks uncovered, I was led to suspect some trickery from the fact that the flint had scratched away the ferruginous oxide with which the surface of the chalk was covered, leaving the marks white. I, however, though doubting their antiquity, took a careful tracing of them, which I now exhibit.

Now the marks found in this shaft of Mr. Harrison's presented precisely the same appearance. Not only was the ferruginous oxide scratched away by the flint, leaving the marks white, but at the time I examined it, I found that the surface was also covered with little black specks, resembling dendrites or fly-marks, and not one of these appeared in the marks. We see, therefore, that as the genuineness of this latter scoring is vouched for by Captain Dillon, who uncovered the whole of it with his own hands, the oxide and the black specks have not reappeared in the marks, notwithstanding the length of time that must have elapsed since the latter were formed, and this attests the genuineness of the former marks found in No. 2 Escarp Shaft. The scoring, it will be seen, has a close analogy to the ornamentation of Australian savages. The most primitive attempts at ornamentation appear to consist in covering the surface of an object at intervals with lines bearing the impress of human design; we see, here, the stamp of a people in the lowest condition of art. For the rest, I see nothing either



in the form of the shaft or in the position of the chalk blocks which Mr. Harrison has noticed, to indicate that this shaft was either constructed or used for any other purpose than those which have been described previously, viz., for the extraction of flints. And I wish I could feel so confident of many pre-historical deductions as I do of the fact that nothing of the nature of a written character has ever been found in Cissbury. I should be sorry, however, if any opinion of mine were to deter Mr. Harrison from making further investigations into this interesting subject.

Mr. PARK HARRISON, in reply, said he regretted that the discussion had touched so slightly on the structural peculiarities of the pit, and the interesting fact that it, for the first time, afforded evidence of habitation. As regards the question whether the marks were accidentally made by horn picks, the idea was absolutely untenable. They have been found in very few pits and galleries at Cissbury, and Canon Greenwell had informed the meeting that he met with nothing like them in the excavations at "Grimes' Grave." A close examination, too, would show that the majority of the marks were either cut with a flint, or some sharp instrument, such as pointed bone. (See Figs. 1, 2, 3.) Incised lines have now been found in three pits at Cissbury, over, or just within the entrances of two galleries in each pit. They may be symbols of ownership, or religious charms: and some, perhaps, hieratic characters of great antiquity. Even if idle marks, it can scarcely be doubted that they had some meaning. Whether or not any of them are sufficiently like archaic forms to justify the suspicion of a common origin with early letters, is a question that must be left to paleographers to decide.

Though sufficient for the purpose of illustrating what was said in the text, the little wood-cuts did not pretend to be *fac-similes*. It had been intended to have a plate of marks, but this was unavoidably postponed. Only a few of the marks were thought to be like early characters. The "commas," or curved signs, as already said in the Report, were made with deer's-horn instruments, but, in his opinion, not accidentally; otherwise the edges of the little pits would have been jagged. † represents the left hand character

in fig. 2 with as much accuracy as is possible, or usual with such small cuts (see Pl. xxiv). As regards the loop in fig. 5, a minute portion of the upper part of the figure appeared to be broken off; and if so, it seemed to be probable that the curved lines would have met. The loop was too wide in the little wood-cut referred to. The marks cut in Mr. Willett's pit [16] differed totally, both in colour and execution, from the name and date, which were slightly scratched at a short distance above them. Col. Fox speaks of this pit as having been accessible to the public; but this, as explained on a former occasion, was not the case until steps were cut in the chalk. W. Penfold was presumably the only person who reached the bottom after the excavation was finished, for there was no name but his, and no initials whatever on the

chalk walls in September, 1875, which could scarcely have been so, if many persons had made the descent.*

In reply to Prof. Rolleston, Mr. HARRISON said that there was no evidence whatever that the skilful miners of Cissbury were savages. They were, probably, in much the same state of culture as the Eastern Islanders, whose priests understood symbolic writing, though the characters they used were engraved with flint, i.e., obsidian, tools. Professor ROLLESTON'S experiment showed conclusively this much at least, that the marks were intentionally made.

DESCRIPTION OF PLATES.

Plate XXIV.

Isometrical view of the cave-pit at Cissbury, showing the position of the marks over the entrance of gallery C, and the remains of cave.

Plate XXV.

Marks on the chalk-rock, and upon detached blocks in the cave-pit.

Figs. 1 to 6, inclusive, are from photographs.

Fig. 7.—Rune-like marks over the entrance of gallery C, reduced from a full-sized drawing and rubbings made by Mr. G. M. Atkinson.

JANUARY 23RD, 1877.

Colonel A. LANE FOX, F.R.S., *President, in the Chair.*

The minutes of the previous meeting were read and confirmed.

The following presents of books to the Library was announced, and thanks were ordered to be returned to the donors for the same:—

FOR THE LIBRARY.

From the BERLIN ANTHROPOLOGICAL SOCIETY.—*Zeitschrift für Ethnologie.* Nos. 2—5, 1876.

From the EDITOR.—*Matériaux pour l'Histoire de l'Homme.* December, 1876.

From the IMPERIAL ACADEMY OF SCIENCES, VIENNA.—*Seitzungsberichte Philos-histor Classe.* 80 Bd., Heft 4; 81 Bd., Heft

* By mistake 6 was said (p. 266) to have had the value of *l*, at a very early date, in the East; it should have been *δ*. This was also the force of the letter in Neo-Carthagenian. Dr. Haines thinks the curved lines in the "loop mark" originally crossed each other, and so formed an early rune.

- 1, 2, 3; 82 Bd., Heft 1, 2; ditto Math-naturio, 1875, I, II, III Abtheil, Nos. 6—10, 1876; II Abtheil, Nos. 1—3; Almanack for 1876.
- From the INSTITUTE.—The Canadian Journal. Vol. XV, No. 14.
- From the EDITOR.—Revue Mensuelle de Médecine et de Chirurgie. No. 1, January, 1877.
- From the EDITOR.—Revue Scientifique. Nos. 29, 30.
- From the EDITOR.—Nature (to date).
- From the ASSOCIATION.—Journal of the Royal Historical and Archaeological Association of Ireland. Vol. IV, No. 27.
- From JAMES HEYWOOD, Esq., F.R.S.—The Primæval World of Switzerland. 2 Vols. By Professor Heer.
- From the AUTHOR.—Across Africa. By Commander Cameron, R.N., C.B.
- From Professor VIRCHOW.—Die Zuleund Mittel der modernum Anthropologie; Die fünfte allgemeine Versammlung der Deutschen; Gessumtsitzung der Akademie; Über einige Merkmale nudere Menschenrassen am Schädel; Beitrage zur Physischen Anthropologie der Deutschen, 1875.
- From A. L. LEWIS, Esq.—Anthropologia (Supplement to).

The election of a new member, Rev. C. N. Barham, of Hants, was announced.

The President then read the following report to the Anthropometric Committee of the British Association:—

REPORT by Col. A. LANE FOX, F.R.S., Commanding 48th Brigade Depôt, on MEASUREMENTS taken of the Officers and Men of the 2nd Royal Surrey Militia according to the General Instructions drawn up by the Anthropometric Committee of the British Association.

THE 2nd Royal Surrey Militia having been called up at Guildford for its annual course of training in the month of May, 1876, I took advantage of the opportunity thus afforded to obtain careful measurements of the whole of the officers and men of the Regiment according to the instructions drawn up by the Anthropometric Committee of the British Association.

The measurements of the individuals included in these returns, 459 in number, exclusive of 18 officers, are available for the purpose of being arranged with others by the Committee in such a manner as may be thought desirable in carrying out the investigations and comparisons that may hereafter be determined upon.

I desire, however, in the first place to say a few words upon the probable advantage of employing an entire regiment collectively as a unit of comparison with similar returns of other regiments or bodies of men obtained in different localities.

The Brigade Depôts afford all the required organisation for taking the statistics of militia and volunteers in their respective counties, with the control necessary to ensure accuracy. It is therefore desirable to consider how far a militia regiment may be taken to represent the physical capacity of the working classes of the district from which it is drawn, and I have arranged the several measurements of the 2nd Surrey Militia in curves according to Mr. Galton's method with a view to assist this inquiry.

Unlike a Regiment of the Line or other branch of the regular army, a Militia regiment is recruited almost exclusively from the neighbourhood of its head quarters. Out of the 459 men comprising the 2nd Surrey Militia it will be seen by the returns that 421, or about 92 per cent., were born in adjacent counties of Surrey, Sussex, Kent, Berkshire, Middlesex, and Hampshire; of these by far the larger number are from Surrey, and the rest are drawn chiefly from the portions of the neighbouring counties which are nearest to Surrey; so that the whole may be said to be derived from within a radius of twenty miles, having Guildford as a centre. The remaining 8 per cent. who are not from this district consist chiefly of the non-commissioned officers of the permanent staff who are at present drawn from different Line regiments, and of men whose place of birth is unknown.

The returns might perhaps have been rendered in some slight degree of more local value if these men had been excluded, but attention was not drawn to the point until too late to alter the returns and diagrams. In proportion as the scheme for the localisation of the Forces comes into more general operation, the permanent staff will tend more and more to become county men like the rest of the regiment.

The following is a return of the nationalities of the 459 men composing the regiment in which the designations are rendered in accordance with the General Instructions under the head of "Origin":—

Very pure English.	Pure English.	English.	Very pure Irish.	Pure Irish.	Irish.	Mixed E. and I.	Otherwise mixed.	Very pure Scotch.	Very pure Welsh.	Not known.
374	34	4	19	3	1	11	10	1	1	1

From this it will be seen that 89 per cent. are pure English, and 81 per cent. very pure English. The rejecting standards of enlistment affect to a certain extent, but only in a slight degree,

the value of the returns as representing the physical condition of the inhabitants of the district. Men who are below the following standards are rejected for the militia, viz., height, 5 feet 2 inches; chest measurement, 32 inches; age, 16 years. These standards are low, and, although they do undoubtedly alter the averages of the regiment, yet, by reducing the measurements to curves, we are enabled to judge how far they really do affect the several measurements to which they apply.* Thus on referring to Table No. 2, representing the heights, it is seen that the rejecting standard of 5 feet 2 inches renders the curve somewhat abnormal by diminishing the downward curve on the left side which would have been formed by men exceptionally below the average, but without in all probability materially affecting the central and upward portions of the curve, which may still be taken to represent, in so far as any such small number of men can represent, the ordinary and highest stature of the population.

On the other hand, the probability that men of very superior physique are more likely to obtain regular employment in civil life, and therefore less likely to join the militia, may be taken to counterbalance the rejecting standards on the other side; so that in a view of the whole conditions of enrolment, a militia-man may, I think, be fairly taken as an average representative of the working-classes of his district.

It may perhaps be thought that the drill which a militia-man undergoes would have the effect of expanding his chest, and thus of raising the average of the militia in regard to this measurement, above that of the population generally, but considering the militia are only under training for one month in the year, and the very small portion of that time which can be devoted to setting up drill, I have no reason to suppose, viewing also the general appearance of the militia as compared with the Line in which drill has doubtless considerable effect, that the chest measurement of the militia is affected in any sensible degree by their training.

It must, however, be remembered that whilst the pay of the militia is uniform throughout the country, the wages of the labouring classes vary in the different counties; and this must without doubt have the effect of enlarging the field of selection in those districts in which wages are low. To what extent this affects the physique of the militia we have at present no means of determining.

Making due allowance for the disturbing elements above mentioned, there can, I think, be little doubt that a comparison

* The diagrams showing the curves are not given here. They can, however, easily be drawn from the tables given at the end of this paper.

of the various militia and volunteer regiments throughout the country would be a means of aiding materially the investigations of the Anthropometric Committee.

I now make a few observations on the several measurements.

Origin.—More definite instructions ought, I think, to be given as to the mode of returning men as town or country folk. Men living in a country town of 10,000 inhabitants, such as Guildford or Farnham, very usually work in the country, and have all the advantage of country air, whilst men living and working in the same towns at indoor occupations, such as bakers, shopkeepers, &c., though living under very different conditions of life, are liable under the present instructions to be included with them as townfolk. In order to render the returns of scientific value, uniformity should be secured on this head. The following is the proportion of each class in the 2nd Surrey Militia, by which it will be seen that, following *my own* definition of town and country folk, 79 per cent. are country folk, and 72 per cent. very pure country folk, that is to say men who, together with their two parents and four grandparents, have worked habitually at out-door occupations in the country:—

Very pure country folk.	Pure country folk.	Country folk.	Very pure town folk.	Pure town folk.	Town folk.	Mixed.	Total.
329	27	7	27	11	11	47	459

Height.—The height has been taken without shoes and stockings.

Weight.—In ordinary clothes, but without jacket or boots.

Eyes and hair.—Tables of numbered colours, such as are used in Mr. Broca's tables,* drawn up expressly for European shades of hair and eyes, might be useful, but they should be referred to Mr. Broca's standards, to avoid confusion. General terms, such as sandy, auburn, &c., are liable to be variously employed by different observers; the patches should, if possible, be 4 inches square, to ensure quickness and accuracy.

The following are tables of the hair and eyes of the 2nd Surrey Militia:—

* Mr. Broca's tables are given in the Anthropological notes and queries for the use of travellers published by Mr. Stanford, Charing Cross, for the British Association.

HAIR.

Red.	Auburn and Sandy.	Light Brown.	Brown.	Dark Brown.	Black.	Total.
2	7	57	253	138	2	459

EYES.

Grey.	Light Blue.	Blue.	Dark Blue.	Light Brown.	Brown.	Dark Brown.	Total.
219	3	89	15	0	132	1	459

From the foregoing tables it will be seen that 47 per cent. are returned as having grey eyes. Taking grey, blue, and light blue together, but excluding dark blue and the various shades of brown, the proportion of light coloured eyes amounts to 67 per cent. On the other hand, the number of dark-haired people returned as having brown, dark brown, or black hair, but excluding light brown, sandy, auburn, or red, amounts to 86 per cent., and of the seven men returned as having auburn or sandy hair, one is a very pure Scotchman, one a very pure Irishman, and one of mixed descent, leaving only four men of English extraction in the whole regiment with hair of that colour.

From these tables it may be affirmed with some degree of certainty that the distinguishing characteristics of the inhabitants of this district consist of grey or blue eyes, with brown or dark brown hair. Out of the 133 men returned as having brown or hazel eyes, there is no instance of red, fair, or sandy hair, and 61 of this number have dark brown hair.

Girth of chest.—The men were all measured naked, except the officers. The allowance made for measuring with the shirt and under waistcoat on should be 1 inch, but it is dependent on the thickness of the shirt.

Breathing capacity.—Coxeter's spirometer was found suitable upon the whole, but appears capable of some slight improvement. The india-rubber is liable to wear into holes at its junction with the brass tube of the stopcock. It would be an improvement if the brass piece were at such a distance from the side of the bag as not to interfere with the rolling up. Most of the men had two or three trials, and some of them required as many as six or eight, before a proper measure could be obtained. The ther-

momometer varied from 55° to 70° during the several days of the experiment.

Strength of Arm.—It has been found in practice that if the pull is taken against a fixture of any kind, it is impossible to prevent the men from throwing the weight of their body into the scale, by which means the experiment is vitiated.

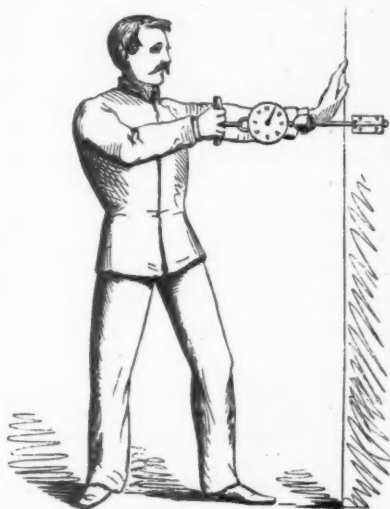
A return is annexed, marked A, showing the result of an experiment with 20 men, to ascertain the difference in lbs. of the pull when the resistance is given by the extended arm only, as in Fig. 1, and when pulling against a spring attached to a wall or other fixture, as in Fig. 2. The result shows that in the latter case the number of lbs. obtained by each man is as nearly as possible double, showing the great importance of attention to this particular. The instruction ought, therefore, to preclude the possibility of using a fixed point of resistance of any kind. Fig. 1 shows the position in which all the trials for this measurement were taken. The extended arm should be stretched out straight from the side and as nearly as possible in the line of the shoulders, otherwise if extended towards the front, at an angle with the line of the shoulders, it gives way to the pull of the other arm, and the number of lbs. pulled is reduced. The spring balance should invariably be used, the balance when in use touching the inner side of the arm. The length of the

FIG. 1.—SHOWING THE POSITION IN WHICH THE TEST OF ARM STRENGTH SHOULD BE TAKEN.



balance from handle to handle should be about 1 foot 8 inches ; if this length is increased the purchase is diminished. The extended arm should on no account be allowed to touch any wall or other fixture, as it has been found that even by resting the extended hand against a table, the number of lbs. can be considerably increased. Attention is drawn to the return showing the performances of 18 officers of the regiment, by which it will be seen that the average pull of the officers exceeded

FIG. 2.—SHOWING THE POSITION IN WHICH THE TEST OF ARM STRENGTH SHOULD *not* BE TAKEN.



that of the men in the proportion of 100 to 77. Their breathing capacity also considerably exceeded that of the men, being in the proportion of 275 to 231.*

* The Return of Officers is not given, the result being all that is necessary to be recorded.

A.

Name and surname.	Strength of arm, drawing power in pounds in position. Fig. 1.	Strength of arm in position. Fig. 2.
W. Langford	84	190
W. Howe	70	130
E. Clarke	75	164
B. Cripps	66	190
W. Etherington	68	160
J. Wiltshire	94	195
G. Martin	82	200
G. Taylor	90	158
H. Butcher	87	160
A. Hanks	100	162
W. Mills	64	115
W. Moth	78	200
W. May	62	164
G. Mills	72	128
I. Turner	92	150
J. Waler	82	195
H. Smith	90	200
G. Hedger	90	140
J. Fuller	108	190
J. Pullen	90	160
Average	81.95	167.55

This return shows the number of lbs. pulled by each man in the position shown in Fig. 1 when the resistance is given by the extended arm only, and in the position shown in Fig. 2 where the balance is fixed against a wall.

Sight.—This measurement required great care. When the dots on the card are employed as a rejecting test only, as in the case of Army recruits, it is only necessary to test the sight at a single distance, but when, as in this case, the object is to ascertain how far the dots can be seen, it is necessary to test the powers of vision at several distances, moving the men backwards, until a point beyond their power of vision is reached, and then advancing them again until the exact limits of visual capacity are determined. This requires considerable time, and anything which is calculated to increase the time taken in the experiment also increases the probability of inaccuracy and error. It was found that the use of the small test dots $\frac{1}{16}$ inch square has this effect. Although in theory the result is the same as when the larger dots of $\frac{1}{4}$ inch square used for the army are employed, in practice it was found that the smaller dots require more careful adjustment to the several distances. The effect of the slightest dirt, or of light and shade upon the card, is greater with the

small than with the larger dots. Greater precision is required in uncovering any specified number of dots, and this is a constant source of delay and error, even the shadow formed by the margin of the covering card impedes the clearness with which the dots can be seen, and the effect when a large number of soldiers or working men have to be examined in a given time is simply the same as if a delicate instrument were placed in clumsy hands. On this account I recommend that the test dots of $\frac{1}{4}$ inch used for the army should be employed in preference to the smaller ones.

The very large excess of country folk over town folk in the regiment precludes the possibility of comparison as to the effect of these different modes of life; and the tables and diagrams here given can only be of use as a prelude to further investigation. Although the returns of a few cases convey a fair idea upon some of the more salient peculiarities, such as the colour of the hair and eyes, I am convinced that no true estimate can be formed of the general physique of the population of a district without measuring a very much larger number of men and women. Whatever may be the amount of care taken in the choice of examples, the collector of the statistics must necessarily prejudice the whole question, in order to make what he conceives to be an impartial selection, and where this inevitable source of error lies at the very root of the inquiry, the accuracy that is bestowed upon the details of measurement is to a great extent thrown away. In the present instance the returns being those of an entire regiment at least precludes the possibility of any error arising from my individual choice.

In conclusion I have only to add that the weights and spring balances employed in the investigation were carefully tested before use. Silvester's patent spring balance being the one employed for testing the strength of arm. The whole of the measurements have been made and the returns drawn up under my superintendence by Staff-sergeant Riordan, the non-commissioned officer usually employed at this brigade dépôt in measuring recruits. To the care and accuracy which he has bestowed on this voluntary labour, as well as to the assistance afforded by Sergeant Light, 2nd Surrey Militia, and Private Nimmo, of the 2nd Queen's Regiment, the results of the investigation are in a great measure due. The whole of the officers and men of the 2nd Surrey Militia also rendered me their best assistance in making the returns as accurate as possible.

The following are tables giving the percentage of the several measurements, from which curves can be drawn, if required. When reduced to curves, these tables shew very clearly the relative amount of accuracy that is obtainable in the measure-

ments: thus the curves resulting from the tables of age, height, weight, and chest measurement are exceedingly even; whilst those shewing the strength of arm, breathing capacity, and sight which depend upon an effort either on the part of the subject or the observer, show less even curves. It is to be regretted that these curves cannot be shewn, as the relative flatness of the different parts of the curve afford more information than can be conveyed in several pages of printing.

TABLE NO. 1 SHOWING THE AGES OF 459 MEN 2ND ROYAL SURREY MILITIA.

Ages.	Number of each age as observed ..	14 years.		100	459	Totals.
		1	16 and under 17.			
		1	4	1.08	13	18.
			35	7.62	18	19.
			36	7.62	19	20.
			34	7.4	20	21.
			48	9.86	21	22.
			38	8.27	22	23.
			31	6.75	23	24.
			22	4.79	24	25.
			26	5.66	25	26.
			24	5.22	26	27.
			15	3.26	27	28.
			16	3.48	28	29.
			12	2.61	29	30.
			16	3.48	30	31.
			9	1.96	31	32.
			9	1.96	32	33.
			5	1.08	33	34.
			9	1.96	34	35.
			6	1.3	35	36.
			9	1.96	36	37.
			6	1.3	37	38.
			6	1.3	38	39.
			3	1.74	39	40.
			2	1.74	40	41.
			3	1.08	41	42.
			5	1.08	42	43.
			3	1.08	43	44.
			2	1.08	44	45.
			4	1.08	45	46.
			4	1.08	46	47.
			6	1.3	47	48.
			9	1.96	48	49.
			2	1.08	49	50.
			1	1.08	50	51.
			1	1.08	51	52.
			1	1.08	52	53.
			1	1.08	53	54.
			1	1.08	54	55.
			1	1.08	55	56.
			1	1.08	56	57.
			1	1.08	57	58.
			1	1.08	58	59.
			1	1.08	59	60.
			1	1.08	60	61.
			1	1.08	61	62.
			1	1.08	62	63.
			1	1.08	63	64.
			1	1.08	64	65.
			1	1.08	65	66.
			1	1.08	66	67.
			1	1.08	67	68.
			1	1.08	68	69.
			1	1.08	69	70.

Average age 26 years.
* Drummer boy.

TABLE No. 2 SHOWING HEIGHTS—2ND ROYAL SURREY MILITIA.

Heights.	* 1	55 inches.	62 and under 63.	64.	65.	66.	67.	68.	69.	70.	71.	72.	73.	Totals.
Number of each height as observed	35	73	63	64	91	64	65	66.	59	66	67.	68.	69.	459
Number of each height reduced to per cents. ..	7.84	15.9	19.82	15.46	12.85	11.54	7.4	5.	3.26	1.08	2	2	1	100

* Drummer boy.

Average height, 65.62 inches.

TABLE No. 3 SHOWING CHEST MEASUREMENTS — 2ND ROYAL SURREY MILITIA.

Chest measurements.	2	28 inches.	29 and under 30.	31.	32.	33.	34.	35.	36.	37.	38.	39.	40.	41.	42.	Totals.
Number of each size as observed	4	8	30	31	32.	33.	34.	35.	36.	37.	38.	39.	40.	41.	42.	459
Number of each size reduced to per cents. ..	1.3	1.74	3.92	10.45	17.64	24.61	14.81	12.85	7.4	2.17	1.08	1.3	65	2	1	100

Average 34.48 inches.

TABLE No. 4 SHOWING BREATHING CAPACITY—2ND ROYAL SURREY MILITIA, as shewn by Coxeter's Spirometer.

Breathing capacity.	2		120 cubic inches.	6	150 and under 160.	8	160 to 175.	11	176 "	14	181 "	40	191 "	58	201 "	54	211 "	55	221 "	62	231 "	43	241 "	25	251 "	16	261 "	27	271 "	22	281 "	15	291 "	Totals.
Number of men of each capacity as observed. }	2		120 cubic inches.	6	150 and under 160.	8	160 to 175.	11	176 "	14	181 "	40	191 "	58	201 "	54	211 "	55	221 "	62	231 "	43	241 "	25	251 "	16	261 "	27	271 "	22	281 "	15	291 "	458
Number of men of each capacity reduced to per cents. }	.04		1.31	1.74	2.4	3.05	8.73	12.66	11.79	12.	13.53	9.38	5.45	3.49	5.89	4.8	3.27	} 100																

Average 232·45 inches.

TABLE No. 5 SHOWING WEIGHTS—2ND ROYAL SURREY MILITIA.

Weights.	*1	74 lbs.	1	90 to 99.	9	100 "	32	110 "	100	120 "	127	130 "	107	140 "	46	150 "	23	160 "	7	170 "	3	180 "	2	190 "	1	200 "	Totals.
Number of each weight as observed }																										459	
Number of each weight reduced to per cents. .. }	2·39		6·97		21·78		27·66		23·31		10·02		5·01		1·52		1·3							100			

* Drummer boy.
Average 137·22 lbs.

TABLE No. 6 SHOWING STRENGTH OF ARM—2ND ROYAL SURREY MILITIA.

Strength of arm.	35 lbs.	40.	48.																			Totals.
				50 to 55.	56 " 60.	61 " 65.	66 " 70.	71 " 75.	76 " 80.	81 " 85.	86 " 90.	91 " 95.	96 " 100.	101 " 105.	106 " 110.	114.	120.	135.				
Number of each strength as observed }	1	1	1	21	33	26	76	51	75	51	57	29	23	6	4	1	2	2	459			
Number of each strength reduced to per cents. .. }	.65																					100
				4.57	7.18	5.66	16.56	11.11	16.34	11.11	12.41	6.31	5.	1.3			1.96					

Average 77.39 lbs.

TABLE No. 7 OF SIGHT—2ND ROYAL SURREY MILITIA.

Distances.	9 feet.	10 and under 15.	15 "	20.	25.	30.	35.	40.	45.	50.	55.	60.	65.	70.	75.	80.	85.	90.	95.	Totals.
Number of men at each distance as observed }	1	1	1	4	..	6	5	6	25	54	59	72	103	64	32	16	4	2	2	457
Number of men at each distance reduced to per cents. . . }	.65			.87	..	1.31	1.09	1.31	5.47	11.81	12.91	15.75	22.53	14.	7.	3.5	.87	.87		100

Size of test dots used



Average 64.19 feet.

DISCUSSION.

MR. LAWSON said: With reference to the test dots employed in the army, they are required to determine the minimum range of vision deemed requisite for a soldier. These dots are one-fifth of an inch in diameter, and at 10 or 15 feet distance from the eye, subtend an angle the same as a centre of two feet on a target at 600 or 900 yards distance, respectively. The ordinary range of vision in a young person, however, far exceeds this, and the dots can be perceived distinctly two or three times farther off, or even more; and were dots of one-fifth inch adopted, there would be much inconvenience experienced, especially in towns, in finding suitable

places for testing the range of vision by their means. To meet this difficulty, the Anthropometric Committee thought it advisable to recommend a dot of one-twentieth of an inch in diameter only, which, being but one-fourth as wide as the other, would subtend the same angle at one-fourth the distance, and so be far more applicable under the circumstances in which numerous persons who might feel inclined to assist in this inquiry are placed.

Col. LANE FOX said, in reply, that the matter referred to by Dr. Lawson respecting the size of the test dots was a purely practical one; the small dots had been used by him at first, but he abandoned them for the reasons stated: 90 or 95—say 100—feet was the utmost distance that could be required for the use of the larger dots, and this could generally be obtained out of doors. It did not appear to him desirable that the test should be taken indoors, as the distance depended upon the light, and the return would resolve itself into one shewing the amount of light admitted into people's houses. He felt convinced that the greatest difficulty to be overcome in obtaining useful returns consisted in securing uniformity of test, without very strict attention to which the results would be misleading.

Mr. Sweet then read the following paper:

LANGUAGE and THOUGHT.

THIS paper is mainly based on one read by me before the Philological Society of London in the summer of 1876, under the title of "Words, Logic, and Grammar." It was suggested to me by a distinguished member of the Anthropological Institute, Mr. E. B. Tylor, that the questions raised by me might prove interesting to anthropologists as well as philologists, and I gladly acceded to the request of that body to read a paper on these subjects, with especial reference to anthropology. I have, accordingly, endeavoured to divest my original paper of all unnecessary technicalities, and by fuller treatment of what might otherwise be obscure to those who are not conversant with the details of philology, to make my exposition as clear as possible.

I regret very much that my original paper was written in complete ignorance of the works of Steinthal. Just before sending my copy to press, I accidentally came on his "Logik, Grammatik, and Psychologie," and was glad to find my views of the relations of grammar to logic fully confirmed. I have with great difficulty secured a copy of this work within the last few days, and regret extremely that my prejudices against German linguistic mysticism (which, in many cases, I must claim to be well founded), prevented me from studying it before.

I can only hope that my observations, imperfect as they are, may be found to be not entirely devoid of originality, and that they may, perhaps, be the means of inducing some of the members of the Anthropological Institute to investigate for themselves questions which belong almost as much to anthropology as to linguistic science.

Introduction.—One of the most striking features of the history of linguistic science as compared with zoology, botany, and the other so-called natural sciences, is its one-sidedly historical character. Philologists have hitherto chiefly confined their attention to the most ancient dead languages, valuing modern languages only in so far as they retain remnants of older linguistic formations—much as if zoology were to identify itself with palæontology, and refuse to trouble itself with the investigation of living species, except when it promised to throw light on the structure of extinct ones.

Philologists forget, however, that the history of language is not one of decay only, but also of reconstruction and regeneration. These processes are of equal, often more importance than those by which the older languages were formed, and, besides, often throw light on them. They have further the great advantage of being perfectly accessible to the observer. Thus the growth of a language like English can be observed in a series of literary documents extending from the ninth century to the present day, affording examples of almost every linguistic formation.

But before history must come a knowledge of what now exists. We must learn to observe things as they are without regard to their origin, just as a zoologist must learn to describe accurately a horse, or any other animal. Nor would the mere statement that the modern horse is a descendant of a three-toed marsh quadruped be accepted as an exhaustive description. Still less would the zoologist be allowed to ignore the existing varieties of the *Equidae* as being “inorganic” modifications of the original type. Such, however, is the course pursued by most antiquarian philologists. When a modern language discards the cumbrous and ambiguous inflexions it has received from an earlier period, and substitutes regular and precise inflections and agglutinations of its own, these formations are contemptuously dismissed as “inorganic” by the philologist, who forgets that change, decay and reconstruction are the very life of language—language is “inorganic” only when it stands still in its development.

The first requisite is a knowledge of phonetics, or the form of language. We must learn to regard language solely as consisting of groups of sounds, independently of the written

symbols, which are always associated with all kinds of disturbing associations, chiefly historical. We must then consider language in its relation to thought, which necessitates some study of the relation of language to logic and psychology. Such investigations, if carried out consistently, will greatly modify our views, not only of English, but of language generally, and will bring us face to face with many of the ultimate problems of language, which have hitherto been rather shirked by philologists. Such problems are those which I propose to discuss in the present paper. I begin with the important question of sentence-, word- and syllable-division, beginning again with the purely formal, or phonetic criteria.

Sentence- and word-division.—The first and most obvious is the organic necessity of taking breath—we are unable to utter more than a certain number of sounds in succession without renewing the stock of air in our lungs, which unavoidably necessitates a pause. Speech in its simplest form consists mainly of short questions and answers expressed in simply constructed phrases—in this case there is not merely a pause, but an absolute cessation of voice.

Within these "breath-groups," or phonetic sentences, there is no pause whatever. This is important to observe, as many people, misled by our ordinary word-division, imagine that they make a pause at the end of every word. But a very little observation will be enough to convince them that the words of a sentence run into one another exactly in the same way as the syllables of a word do. This coalescence is most readily observable in the stopped consonants, which, when sounded alone, or at the end of a sentence, end in a marked explosion of breath, which is sometimes called the "organic recoil." Now if we compare such a sentence as "he took off his hat" and "he took his hat off," we see that this organic recoil is quite wanting in the second sentence, the *t* in "hat off" being pronounced exactly as in the single word "hatter."

The second criterion is force or stress—the most important element in the synthesis of speech-sounds. If we take a simple sentence, such as the imperative "come to-morrow," and regard it provisionally as one undivided sound-group, all that we can hear is that certain syllables are uttered with more force than others: indicating force by italics, we have, therefore, "cometo-morrow." We find, in short, that every sentence can be analyzed into smaller groups characterized by one predominant stress-syllable, round which the others group themselves. In our sentence there are two such stress-groups; and if we consider the meaning of the sentence, we see that the number of stress groups agrees exactly with that of the words it contains

—a word is, phonetically speaking, a stress-group. It must now be observed that the stress, although it tells us how many words there are in a sentence, does not tell us where the words begin. Thus in the above sentence there is nothing in the *sound* to enable us to assign the second syllable to the first or the second stress-group—there is, phonetically speaking, no more reason for the division “come tomorrow” than for “cometo morrow,” although the *sense* shows clearly that the first is the only possible one. Word-division is really a very complex problem, involving many considerations, phonetic, logical and grammatical. We get so accustomed to our received word-division that we regard it as something self-evident. But when we have to deal with unwritten languages, we find it by no means so easy. Thus in Mr. Jenner’s paper on the Cornish Language (“Trans. of the Phil. Soc., 1873-4”) it is stated that at the beginning of the last century Cornish was “a most irregular jargon, the chief peculiarity of which was a striking uncertainty of the speakers as to where one word left off and another began.” I must confess to having encountered the same difficulty in my study of our own language.

It is evident that word-division implies *comparison*. As long as we confine ourselves to the examination of isolated sentences, we shall not advance one step further. But when we compare a variety of sentences in which the same sound-groups are repeated in different combinations, we are able first to distinguish between meaning and unmeaning sound-groups, and finally to eliminate a certain number of groups having an independent meaning and incapable of further division. The test of independent meaning is *isolation*, or the power of forming an independent sentence. We may, therefore, define a word as an ultimate, or indecomposable sentence. Thus the verb “come” pronounced with a falling tone is equivalent to the fuller sentence, “I order you to come;” the adverb “up” pronounced with a rising tone may signify “shall we go up?” or may have some analogous meaning determined by the context. The same applies also to nouns, pronouns and adjectives. Sound-groups, which, although phonetically capable of isolation, are meaningless when so isolated, are not words.

But between these two extremes there is an intermediate class of sound-groups, which, although not capable of being isolated and forming sentences by themselves, are yet not utterly devoid of meaning, and can, therefore, be to a certain extent isolated in thought, if not in form. Thus, if we compare the three groups “man” “aman,” and “theman,” we see that the two prefixes have an unmistakable, though somewhat vague meaning of their own, which enables us to identify them at

once in all other cases in which they are prefixed to nouns, and yet these two syllables would convey no meaning if pronounced alone. If, on the other hand, we attempt to analyse such a group as "deviate," we find that not only are its elements incapable of logical isolation, but that they fail to suggest any idea whatever. The last syllable is, of course, identical with the preterite of the verb "eat," but the association is felt to be purely fortuitous. But if we compare "deny," "depose," and "deprive," we feel at once the meaning of deprivation and negation in the *de*, just as we feel the generalising and specialising meaning of the prefixes in "aman," and "theman," although the syllables "ny," "pose," and "prive," have no meaning whatever by themselves. We are, therefore, obliged to regard "deny" &c., as ultimate, indecomposable words, in spite of the significance of the prefix, while in the case of "theman" and "aman" it is, to some extent, an open question whether we have here one word or two words. It seems best to distinguish two classes of words, *full-words* and *half-words*, "man" being a full-word, "the" a half-word—that is, a word incapable of forming a sentence by itself, or of suggesting an independent meaning.

The next question is, how far do these logical distinctions correspond to the phonetic ones already laid down? The answer is simple enough. Full-words correspond to stress-groups, half-words to stressless syllables. If we wish to know how many full-words there are in a sentence, we only have to count the number of full stresses. Each full stress indicates a full-word, although it does not show where the word begins and ends.

It is evident, therefore, that the formal criteria of word-division may vary according to the laws of stress in each language. In Icelandic, for instance, where every word which has a stress at all (that is, every full-word), takes it on the first syllable, the stress not only indicates the full-words, but it also shows where they begin. In French, again, the stress is so slightly marked and so vague as to be no guide whatever even in distinguishing between full- and half-words. In "arc-en-ciel," for instance, there often is a strong stress on the "en," the most unimportant member of the combination.

It must be remarked that the test of being able to form a sentence by itself does not strictly apply to all words. The finite verb is an important exception. The third person, "goes," for instance, cannot form a sentence by itself; by the sentence-test, therefore, "goes" is not a word; while "hegoes" is. And yet it would be absurd to deny the title of word to "goes" in such a sentence as "themangoes." We feel "goes" to be a

full-word, 1, because it has the full stress; 2, because of the analogy of the imperative "go," which can stand alone; and 3, because of "hegoes," which is felt to be a compound precisely analogous to "theman," &c.

There is, finally, an important phonetic element of word-division to be noticed. This is the fact that certain sounds and sound-combinations only occur in certain positions. Thus the sound *ng*, and the combinations *tl*, *x*, &c., never occur at the beginning of a sentence, and others, again, never occur finally. It is, therefore, clear that these sounds cannot begin or end any full-word.

Derivative syllables and inflections.—We must now consider the important question of the relation of half-words to derivative syllables and inflections. It need scarcely be remarked that no absolutely definite line can be drawn between them, and that the distinctions made in practice are often purely conventional.

We must first consider an important distinction between full- and half-words, which clearly brings out the semi-inflexional character of the latter, viz., that full-words are position-free, half-words not. Compare the varying position of "go" in such sentences as "goaway," "I'llgo," "I'llgoaway," with the unvarying præ-position of "the" in "theman." The same fixity of position characterises derivatives and inflexions also, but in a higher degree. Thus, although the position of "the" *before* its noun is fixed, the connection is loose enough to allow an adjective to come between, as in "thegoodman." Such "incorporations" are quite exceptional with derivative syllables, and still more so with inflexions. It is interesting to distinguish between "agoodman" and such collocations as "manyaman," where the adjective is simply prefixed to the noun and its prefix instead of being incorporated. In "ahundredmen," also, there is no incorporation, "ahundred" being a prefixed substantive used as an attribute-word.

Derivations may be either initial or final, inflexions are only final. This last is, of course, an arbitrary limitation, which although convenient enough in treating of the old Aryan languages, in which the most general relations were generally expressed by suffixed syllables, does not apply to other languages, which indicate the same relations by means of prefixes. Even in the Aryan languages such formations as the augment and reduplication can only be conventionally separated from the postfixed inflexions. It is, however, undeniable that, in the Aryan languages at least, the end of words is more exposed to phonetic decay than the beginning, and consequently that that intimate fusing together of root and modifying syllable, which

is felt to be something more advanced than mere derivation, and which we call inflexion, has a right to be considered rather as a "final" than as an "initial" phenomenon.

There are several important distinctions between half-words and derivatives. Half-words can be used everywhere where their meaning allows of it, thus "the" can be prefixed to all nouns. Such a derivative as "be," on the other hand, can only be prefixed to certain words without any apparent reason—we have "become," but not "bego." Further, the root often has no independent existence; from "behave" (pronounced "be-haiv"), for instance, we cannot deduce a verb "have" (haiv). Or else the connexion between the meaning of the simple root and that of the derivative is not evident, as in "come," and "become." There are, of course, various degrees of obscuration of meaning; the prefix "be," for instance, is practically almost meaningless in the present English, while "mis" in "mistake," "misfortune," &c., has a perfectly clear meaning. But as a general rule the connexion between derivative syllable and root is logically very intimate, more so even than in inflexions. Sometimes the derivative syllable even takes the full-stress from the root, as in the German *ant-wort*, which never happens with half-words and inflexions.

Inflexions differ from derivative syllables, and agree with half-words in being of general, unrestricted application, and in always preserving a more or less definite general signification. Their main characteristic is phonetic variation and obscuration; derivative syllables are invariable in form, inflexions not. Compare the plural forms "hats," "dogs," "men," "feet," so definite in meaning, and so divergent in form, with a group of "be" derivatives, with their constancy of form and want of meaning. Inflexions often express the same idea in totally different ways, either from phonetic change, as in the Latin acc. plurals *ovēs*, *equōs*, and the Greek acc. singulars *híppon*, *ópa*, or from confusing the meanings of forms of independent origin, as in the Latin datives *populō* and *patri*.

If we assume, as we seem to be justified in doing by historical evidence, that derivative syllables and inflexions have developed out of half-words, we may roughly describe a derivative syllable as a half-word which has lost its logical, an inflexion as one which has lost its phonetic independence.

Syllable-division.—We may now turn to the important question of syllabification. The definition of a syllable is easy enough: it is a group of sounds containing a vowel, or, in some cases, a vowel-like consonant. To determine the number of syllables in a word, we have simply to count the number of

vowels. The difficulty is to tell where the syllable begins. Here I am compelled to differ both from Mr. Bell and Mr. Ellis. Mr. Bell considers that the division into syllables is determined by the nature of the sounds which constitute the syllable, whereas I hold that syllabification has nothing to do with the sounds themselves, but depends entirely on the force with which we pronounce them. (It must be understood that I speak of the natural syllabification of spoken language, not of the artificial syllabification of the spelling-books.) Let us consider the syllabification of a natural, simple sentence, such as "takeup-theteacup." Here we at once feel that the first *k* belongs to the preceding syllable, that the syllabification is clearly "take-up" (taik-up), while the second *k* belongs to the following syllable, the division being "tea-cup" (= tee-kup), the consonant being the same in both cases. The difference is simply one of stress, the first *k* being pronounced with weak, the second with strong force. (We may for the present disregard the fact that the stress is in both cases secondary.) The influence of the syllable-stress in determining the meaning of words is so important that if we reverse that of "takeup" by beginning the secondary stress not on the vowel, but on the preceding *k*, the word becomes quite unintelligible, or rather, sounds like an Irish pronunciation of "teacup." Other examples of varying syllabification are "notatall,"* and "atallman," "atak," = "attack" and "atak," = "at Ack" (name of place). We see, in short, that a syllable is a vowel-group beginning with a certain degree of force, which decreases up to the end of the syllable, till a new stress marks the beginning of another syllable. This decrease of force is observable in monosyllables also: in "cat," for instance, the *k* is much stronger than the *t*—we do not pronounce "kat" or even "kat," but only "kat." Indeed, it may be stated as a general law that perfect uniformity of force is something exceptional: force is followed by weakness of stress, and uniform weakness, again, cannot be sustained, but requires force to relieve it. These principles are clearly shown in the accentuation of polysyllabic words. If we carefully measure the degrees of force with which the different syllables of a word like "impenetrability" are pronounced, we shall find that every syllable has a different degree of force. Simple sentences, which are phonetically identical with polysyllabic words (or even in some cases with monosyllable ones), follow the same laws. They always have one predominant stress which dominates over the simple word-stress. The great distinction between words and sentences is that in the former the predominant stress is fixed

* Generally, however, pronounced "notatall," just as "at home" becomes "atome."

and invariable, while in the latter it varies according to the principle of emphasis, which gives the strongest stress to the most important word.

Word-division in writing.—We may now turn to the practical question of word-division in writing. If we are to be guided consistently by logic, we must either write all half-words, derivative syllables and inflexions as separate words, or else incorporate them into the full-words. The difficulty is that, although word-division is mainly logical, the purely formal side of the question must also be considered. Thus, although it would be as easy to write the plural of "fish" in two words "fish is," as it would be if the "is" were the verb substantive, it would be impossible with the plural of "foot," unless indeed we were boldly to write "ft ee," although even this spelling would ignore the fact that the *ee* is as much part of the word itself as a sign of the plural. Cases in which unpronounceable letter-combinations would have to be written separately have also to be considered. The isolating system is thus found to be impracticable, if carried out consistently, and nothing remains but that of joining the half-words on to the full-words. This method, while offering considerable difficulties of detail, is practicable, although it has not been carried out consistently in any language I know. Our present word-division is a compromise between the two extremes of isolation and agglutination. As a general rule we agglutinate inflexions and derivatives, and isolate half-words, whose connexion with the whole-word to which they belong is less intimate than in the case of inflexions and derivatives. Inflexions are only acknowledged when sanctioned by Latin Grammar. Such purely modern inflexions as the negative "Icant" from "Ican," where the *nt* = "not," although conventionally only a half-word, not a true inflexion, could not be written as an isolated word, are shirked by that convenient compromise the apostrophe ('): by writing "can't," we keep up the fiction of the divisibility of a monosyllable into two separate words.

All these considerations show the hopeless confusion into which orthography falls when it attempts to overstep its legitimate function—that of giving a faithful graphic representation of the sounds of the spoken language. The attempt to indicate simultaneously the formal and the logical side of language by the same alphabet—an alphabet, it may be remarked, which is barely capable of fulfilling its purely phonetic duties alone—is about as successful as most compromises, that is, instead of doing one thing properly, it does two things badly. If, for instance, it is convenient to denote a substantive by a capital letter in German, why should we not do so in English, and why

should not the same principle be extended to the other parts of speech? Adjectives, for instance, might be written with a turned capital, verbs with an italic, adverbs with a turned italic. Again, in Latin it would be very convenient to have a series of marks to indicate the different cases, independently of their form, and would much facilitate the understanding of Latin. Others, again, think that the spelling of every word ought to give a brief epitome of its etymology and history. If carried out consistently, all this would postulate an entirely independent set of signs, which, for special purposes, would be written between the lines of ordinary phonetic writing, forming a sort of short-hand logical, grammatical or historical commentary, as the case might be. In the same way I should consider word-division simply as a logical commentary on the phonetic text; in short, I would abolish the ordinary word-division altogether.

But the abandonment of conventional word-division by no means postulates a return to the old system of writing each sentence without a break. On the contrary, it is clear that the great assistance afforded to the reader by presenting the letters in groups of moderate length was the one great reason for abandoning the original system of non-division. As we have seen, the most important element in the synthesis of speech-sounds is stress. I propose, therefore, to follow the analogy of musical notation, and divide our sentences into bars, making the beginning of each group of letters coincide with a full-stress. The accent-mark otherwise required to mark the full-stress would be available for the secondary stress, and the same mark, when placed before a letter-group or "stress-group," as we may call it, would indicate the emphatic sentence-stress. Thus with a single mark we should be able to indicate no less than four degrees of stress. We should, however, also require a mark to indicate absence of stress at the beginning of a sentence. If we added a sign for breath-taking, and two accents to indicate the rising and falling tones, we should be able to dispense entirely with the present unsatisfactory system of punctuation, &c., and to express clearly and precisely what they indicate only imperfectly and vaguely.*

Logic and language.—The great difficulty of all investigations which involve a study of the meanings of language is the want of a satisfactory classification of what is expressed in language. We have not even a classification of the words themselves, except Roget's "Thesaurus of English Words and Phrases," which, although a wonderfully acute and full work, is now somewhat antiquated, written as it was before the rise of modern psychology, under all the disadvantages of being a first attempt.

* Examples of this stress-division will be given hereafter.

I have been engaged for some years in trying to devise a more consistent and satisfactory scheme of classification; but as it is still unsettled in many of its details, I will not enter into any details now, but content myself with a few general remarks.

In the first place it must be borne in mind that the ultimate ideas of language are by no means identical with that of psychology, still less with those of metaphysics. Language is not in any way concerned with such psychological problems as the origin of our ideas of space and matter; for at the time when language was evolved, these conceptions were already stereotyped in the form of simple ideas, incapable of any but a deliberate scientific analysis. Even such universally known facts as the primary data of astronomy have had little or no influence on language, and even the scientific astronomer no more hesitates to talk of the "rising of the sun" than did the astrologers of ancient Chaldaea. Language, in short, is based not on things as we know or think them to be, but as they *seem* to us.

But although the categories of language do not require so deep an analysis as those of psychology, they are on the other hand far more complicated. Each word we use suggests a large number of ideas at once, varying always according to the context, and it is a matter of extreme difficulty to select the really characteristic and essential idea or ideas, which can alone be made the basis of classification. It is the great defect of Roget's system that he often classes his words by some extraneous idea which they suggest. Thus "food" is considered as something purely mechanical, as a mode of "insertion," and hence is included under "directive motion," whereas it clearly comes under "volitional functions of living beings" with, of course, a cross-reference to "insertion" and its other mechanical associations. "Theft" again is naïvely classed as a mode of "transfer of property," whereas it belongs first to "ethics" or "morality," and only subordinately to "property," ethics being a far wider category than property, although both ideas are equally indispensable to the meaning of the word. It is much as if we were to class frogs and horses together as "quadrupeds," and then make a special class "mammalia" to distinguish horses. For many words special compound categories are required. It is, for instance, quite misleading to class "sharp," "edge" and "knife" together under "superficial form," as Roget does; the essential difference between "knife" and the other two is that while they denote (or can denote) natural objects, "knife" always implies human agency: we require therefore a special category "inanimate things + volition," or something of the sort. Similarly "meadow," as opposed to "heath," etc., requires a special complex category.

It is further very important to begin with a limited selection of words in popular use. Roget's Thesaurus is full of such words as "zoohygiantics," "cicuration," &c., which only tend to confuse the mind, and increase the difficulty of arrangement. In my own lists I have cut out at least three-fourths of the words given in ordinary dictionaries.

Indeed, there can be no question that a vocabulary of, say, 3,000 representative words would be amply sufficient to begin with. If these words were properly classified, the rest of the words of the language would offer no difficulty: their arrangement would be merely a matter of detail.

Such a vocabulary would also form a most valuable foundation for the practical study of language. The study of 3,000 of the commonest words in any modern language by means of idiomatic sentences taken from actual life (not made up artificially, as is done in most elementary books), the whole being arranged according to the meanings, would enable any one to express himself on most of the ordinary topics of life with far greater accuracy than is now attainable, even after years of floundering about in the pages of unwieldy and unpractical dictionaries and grammars.

For anthropologists and students of psychology such a vocabulary would be of the highest utility. For the investigator of savage life a much smaller one would suffice to give a full and comprehensive picture of the moral, social, and intellectual state of those who speak the language.

I will now discuss the parts of speech, confining myself for the present to the consideration of noun, adjective, and verb. I may remark at once that the real difficulty of determining the meaning of the parts of speech lies in the fact, which logicians and grammarians obstinately ignore, that they often have no meaning at all. Indeed the whole of language is an incessant struggle and compromise between meaning and pure form, through all the stages of vagueness, ambiguity and utter meaninglessness.

If we confine our attention to material objects and to the simplest nouns, adjectives, and verbs, we see at once that the original function of these classes of words was to denote things and their attributes; adjectives denoting their permanent attributes or qualities; verbs their changing attributes or phenomena. It must be borne in mind that primitive man did not distinguish between phenomena and volitions, but included everything under the head of actions, not only the involuntary actions of human beings, such as breathing, but also the movements of inanimate things, the rising and setting of the sun, the wind, the flowing of water, and even such purely inanimate phenomena as fire, elec-

tricity, &c., in short, all the changing attributes of things were conceived as voluntary actions. Hence the origin of verbs from the simple root with a personal pronoun following. Further, in speaking of things it would be natural to call attention in the first place to their changing rather than to their permanent attributes, which would generally be taken for granted. Primitive man would not trouble himself with such propositions as "man is mortal," "gold is heavy," which are a source of such unfailling delight to the formal logician; but if he found it necessary to employ permanent attribute-words, would naturally throw them into what is called the attributive form, placing them in immediate proximity with the noun, whose inflexions they would afterwards assume. And so the verb gradually came to assume the purely formal function of predication. The use of verbs denoting action necessitated the formation of verbs to denote "rest," "continuance in a state," and when, in course of time, it became necessary in certain cases to predicate permanent as well as changing attributes, these words were naturally employed for the purpose, and such a sentence as "the sun continues bright" was simply "the bright sun" in another form. By degrees these verbs became so worn away in meaning, gradually coming to signify simple existence, that at last they lost all vestiges of meaning whatever, and came simply to be marks of predication. Such is the history of the verb "to be," which in popular language has entirely lost even the sense of "existence." Again, in a still more advanced stage, it was found necessary to speak not only of things, but of their attributes. Thus, such a sentence as "whiteness is an attribute of snow" has identically the same meaning as "snow is white," and "white snow," and the change of "white" into "whiteness" is a purely formal device to enable us to place an attribute-word as the subject of a proposition. We see now that the only satisfactory definition of a part of speech must be a purely formal one: "snow," for instance, is not a noun because it stands for a thing, but because it can stand as the subject of a proposition, because it can form its plural by adding *s*, because it has a definite prefix, &c., and "whiteness" is a noun for precisely the same reasons. By using the technical terms "noun," &c., in a purely formal sense, and distinguishing words according to their meaning as thing-words, attribute-words, &c., we shall be able to escape the hopeless confusion into which grammarians fall, who appeal alternately to the meaning and the form of the parts of speech in grammatical discussions. "Snow" then is both a thing-word and a noun, "white" is a quality-word and an adjective, "whiteness" a quality-word and a noun. I may notice here that great indignation was roused some time ago by a pedantic

school-inspector, who plucked some unhappy children for calling "cannon" in "cannon-ball" a noun instead of an adjective. The fact is that he had observed that "cannon" in "cannon-ball" was not a thing-word, but an attribute-word, and imagining that thing-word and noun were convertible terms, hastened to make the children feel the weight of his brilliant discovery. He would probably be as much surprised as the children themselves to hear that not only when it comes before "wall" is "stone" a quality-word, but also when it follows a transitive verb, in fact that the accusative case is what he would call an "adverb," as I hope to show hereafter.

We may now turn our attention to logic, and first of all to that introductory portion which treats of names. Although formal logic is mainly based on language, it has developed some views of its own which have had considerable influence on the grammatical analysis of language. I propose first to examine the theory of denotation and connotation. General names, such as "man," "horse," are said to denote an object and connote or imply various attributes. Proper names, such as John, London, are said only to denote an object, and not to connote any attributes. Here logicians have strangely overlooked the fact that such a word as John connotes at least two attributes, "human" and "male," "male human being." I maintain also that the name John, to those who know him, connotes an immense number of other attributes, physical, moral, and mental. That the name is practically applied at random to a variety of men is a mere accident, an imperfection of language. The word "sun," which, like John, is practically a proper name, also connotes to those who know what the sun is, a number of attributes: to people who had never seen or heard of the sun, it would connote nothing at all, less even than John, which even to those who do not know John personally, always connotes "male human being." An instructive instance of the dependence of logic on the accidents of language is afforded by the distinction it makes between such words as "white" and "whiteness." "Whiteness" is correctly described as an "abstract" name, as signifying an attribute without reference to the things that possess the attribute. "White," however, is held to be connotative: it denotes particular objects and connotes the attribute "whiteness." How a word can be said to denote an object which is entirely unknown until the name of that object is joined to it, was always a matter of bewildering astonishment to me, when I first began to study logic, and probably has been to many others as well. The truth is, of course, that "white" is as much an abstract name as "whiteness" is, the two being absolutely identical in meaning. I consider, further, that all attribute-words are denotative and

connotative, they denote an attribute and connote attributes of that attribute. Thus the word "colour" is the name of an attribute, but it also connotes all the various kinds of colour, red, blue, &c.; "bright" connotes various degrees of brightness, and so on. These secondary attributes again admit of connotation, and so on almost *ad infinitum*. The terms denotation and connotation thus appear to be applicable to every possible word, and therefore to be practically meaningless and useless. We are now able to understand what an adverb is—it is simply the attribute of an attribute, and bears exactly the same relation to an attribute, as a permanent attribute (adjective) does to a thing-word. Grammarians, misled by a false logic, describe adverbs as denoting the *manner* of an action, or make use of some similar expression, forgetting that manner is as much an attribute as anything else. Hence it follows that when an adjective is joined to a noun which is either entirely or only partially an attribute-word (action-word, for instance), the adjective is in meaning identical with an adverb; "he is a good runner," for instance, is identical in meaning with "he runs well."

We may now turn to the consideration of the proposition in logic. A regular logical proposition, such as, for instance, "all men are bipeds," is clearly nothing but a stereotyped form of the linguistic sentence. In language the subject being originally a permanent thing is stated first; when once stated its permanence is taken for granted and retained by the mind until the predicate, originally an impermanent attribute or phenomenon, is stated. That there is, however, no absolute necessity for this order is shown not only by the frequency with which it is violated in most inflexional languages, but also by the fact that the finite verb was originally formed by the agglutination of a subject-pronoun coming *after* the predicated root. And now comes the very important consideration that not only is the order of subject and predicate to a great extent conventional, but that the very idea of the distinction between subject and predicate is purely linguistic, and has no foundation in the mind itself. In the first place, there is no necessity for a subject at all: in such a sentence as "it rains" there is no subject whatever, the *it* and the terminal *s* being merely formal signs of predication. "It rains: I will therefore take my umbrella," is a perfectly legitimate train of reasoning, but it would puzzle the cleverest logician to reduce it to any of his figures. Again, the mental proposition is not formed by thinking first of the subject, then of the copula, and then of the predicate: it is formed by thinking of the two *simultaneously*. When we formulate in our minds the proposition "all men are bipeds," we have two ideas, "all men"

and "an equal number of bipeds," or, more tersely, "as many men, as many bipeds," and we think of the two ideas simultaneously, not one after the other, as we are forced to express them in speech. The simultaneity of conception is what is expressed by the copula in logic, and by the various forms of sentences in language. If these views are correct, the conversion of propositions, the figures, and with them the whole fabric of formal logic fall to the ground. It by no means follows that logic is entirely destitute of value, but we shall not arrive at the real substratum of truth until we have eliminated that part of the science which is really nothing more than an imperfect analysis of language.

Structure of English.—I now propose to say something about the structure of English, and the proper method of treating its grammar. I may state at once that I consider the conventional treatment of English to be both unscientific and unpractical, starting as it does with the assumption that English is an inflexional language like Latin or Greek. The time is still not very far distant when the grammar of all languages—however diverse their structure—was servilely modelled on that of Latin. It was assumed, for instance, that as Latin had five cases, English must necessarily have just as many and no more. In those days *man* was declined thus:—

nom.	man.	acc.	man.
gen.	man's.	voc.	oh man !
dat.	to a man.	abl.	by a man.

After a time, however, when the historical and comparative study of language had opened people's eyes a little, they began to see that on this principle the number of cases in English might be indefinitely extended—in short that there might be as many cases as there were prepositions. The cases were, accordingly, cut down to three, nominative, genitive, and accusative. As I shall show hereafter, it is very doubtful whether the so-called accusative of the pronouns has any right to be considered a case at all, and when we consider that the genitive inflexion can generally be replaced by the preposition *of*, we see to what narrow limits the English cases, or rather case, are confined. The verbal inflexions are hardly less limited. The only personal inflexion is the *s* of *he goes*, which is practically a superfluous archaism. The only other inflexions are those which form the preterite and the two participles. These, together with the plural of nouns, are the only essential inflexions of English. No wonder, then, that the historical philologist looks with contempt on English as a language "destitute of grammar." Certainly it

is so, if judged from a purely antiquarian point of view. That this point of view is inadequate to the requirements of English grammar is tacitly admitted by the grammarians, who, while refusing to allow that "of a man" is a case, do not scruple to put "I did love," &c., on a level with the inflexional preterite. And yet most of them ignore the equally important formations of the emphatic and negative forms or moods, simply because such forms are not recognised in Latin grammar.

All this confusion and inconsistency arises from the fact being ignored that the history of language is not merely one of negative decay, but also of positive reconstruction. Every language has the right to be regarded as an actual, existing organism, not merely as the representative of earlier stages. The fact that English was an inflexional language two thousand years ago does not prove that it is so now. The only rational principle is to look at the language as it is now, and ask ourselves, How does this language express the relations of its words to one another? If we examine English on this principle, we shall have no hesitation in characterising it roughly as an isolating language which is passing into the agglutinative stage, with a few traditional inflexions. Hence the value of English as a preparation for the study of language generally, when studied rationally: it enables us to watch many linguistic phenomena in the very process of formation, which in other languages can only be observed in a stereotyped condition. Another advantage of English for comparative purposes is the many-sidedness of its structure. In this respect it differs essentially from languages whose structure is primitive, not, like that of English, the result of casting off an effete inflexional system. In most agglutinative languages there is no distinction of meaning made by position, all grammatical relations being expressed by modifying syllables which have a fixed order, from which they never depart. English can, therefore, only be compared with such languages in as far as it is itself agglutinative, while in that part of its grammar which depends on position it can only be compared with "isolating" languages, such as Chinese. Again, although English agglutination is mostly of a rudimentary type, it is in other cases extremely advanced. Who, for instance, in comparing the positive future "he'llgou" with the negative "he'won'tgou," would be able to detect the root "will," which comes out clearly in the emphatic future, "he'willgo?" In such forms there is as much obscuration of the formative elements as in the traditional inflexions. These observations show how difficult it is to draw the lines which separate the different stages of linguistic development—languages pass from the isolating to the agglutinative and inflexional stages by insensible degrees, and

even during the fullest development of inflexion begin to lay the foundation of future agglutination.

One striking result of the English power of expressing grammatical relations by position is the freedom with which one part of speech may be converted into another. Thus "sunday" is a noun, "then" an adverb, but in "sunday evening," "— the then state of affairs"* they are both attribute-words. In the same way any part of speech may be made into a noun simply by prefixing an article or adjective.

Even groups of words may be treated in this way. Thus in the sentence "— the book you sent me was no use," "use" is simply equivalent to the adjective "useless." When we talk of "— the employers' liability for injury bill," the whole of the group except "bill" is nothing but a huge composite adjective. These groups may also be inflected like simple words, as in "— the man saw yesterday at the theatre's father" where on all received principles of grammar the theatre's ought to be parsed as the genitive of "theatre."

English, in common with the Romance languages, is often described as an "analytical" language, as opposed to a "synthetic" language, such as Latin. This term is meant to imply that the agglutinations of modern languages are deliberate substitutions for the older inflexions—the inflexions are supposed to be "analysed" into their simple elements. It is easy to see that this view is quite erroneous. If the characteristic agglutinations of modern English, for instance, were nothing but substitutes for inflexions, there would be exactly as many agglutinations as there originally were inflexions; but, as we see, we have in English combinations to which there is nothing corresponding in the older inflexional languages, while, on the other hand, many inflexional distinctions are entirely lost.

Cases.—I propose now to examine some portions of English grammar more in detail, beginning with the cases of nouns and pronouns.

It is a curious fact, hitherto overlooked by grammarians and logicians, that the definition of the noun applies strictly only to the nominative case. The oblique cases are really attribute-words, and inflexion is practically nothing but a device for turning a noun into an adjective or adverb. This is perfectly clear as regards the genitive, and, indeed, there is historical evidence to show that the genitive in the Aryan languages was originally identical with an adjective-ending, "man's life" and "human life" being expressed in the same way. It is also clear that "noctem" in "flet noctem" is a pure adverb of time. It is not so easy to see that the accusative in such sentences as

* The (—) indicates weak stress.

"he beats the boy" is also a sort of adverb, because the connexion between verb and object is so intimate as almost to form one simple idea, as in the case of noun-composition. But it is clear that if "boy" in the compound noun "boy-beating" is an attribute-word, it can very well be so also when "beating" is thrown into the verbal form without any change of meaning.

Our difficulty in determining the meaning of the accusative has, as far as I know, never been pointed out hitherto, viz., that in many cases it has no meaning at all, but merely serves to connect a verb with a noun in various arbitrary ways. With such verbs as "beat," "carry," &c., the accusative unmistakably denotes the object of the action expressed by the verb, but with such verbs as "see," "hear," it is clearly a mere metaphor to talk of an "object." A man cannot be beaten without feeling it, but he can be seen without knowing anything about it, and in many cases there is no action or volition at all involved in seeing. And in such a sentence as "he fears the man," the relations are exactly reversed, the grammatical nominative being really the object affected, while the grammatical accusative represents the cause, but as he is conceived as a *passive* cause, the fiction of object can still be maintained. The meaninglessness of the accusative is further shown by the inconsistencies of its actual use in language. Thus Latin has "rideo aliquem," English "laugh at," while "deride" has the accusative as in Latin. Compare also English "see" with "look at" and the divergent use of the dative and accusative in Greek and Latin. It is, indeed, often doubtful *à priori* whether any language in a given case will employ the accusative or not—we can only tell by observing the actual form. Now in English, in the noun at least, the only "form" of the accusative is its position after the verb. As far as the form goes, then, "king" in "he became king," "he is king," may be in the accusative. And, as a matter of fact, English people who have not been taught grammar, that is to say Latin grammar, in their first attempts to express themselves in such a language as German, *do* put "king" in the accusative. They are naturally confirmed in this idea when they find that if they substitute for the noun a personal pronoun, which is supposed to have distinct forms for nominative and accusative, the accusative is used, and it is only the influence of ignorant grammarians that prevents such phrases as "it is me" from being adopted into the written language, and acknowledged in the grammars. In Danish "det er mig" is the *only* form known, and "det er jeg" would be as wrong as "c'est je" would be in French. Indeed, were it not for Latin grammar, we can easily imagine the grammarians proving that "king" in "he became king" could not possibly

be anything but the accusative, the action of the verb "become" passing on to the object "king." That there is really nothing extravagant in this view is shown by the Old English "he wearð to cyninge (gehálgod)" and the German "er ward zum könig (ernannt)."

Further we have also a positional dative, as in "he gave the man a book." May not then the supposed accusative in "he flattered the man," "it pleased the man," be really a dative, as it certainly would be historically? * This view might again be supported by an examination of the corresponding pronoun forms, for "him" is historically a dative, not an accusative, and so with the others also. †

But the truth is that, whatever the history may be, the so-called accusative of the personal pronouns is functionally not a case at all, but a special form which may be indifferently nom., acc., or dat., as the case may be. The real difference between "I" and "me" is that "I" is an inseparable prefix used to form finite verbs, while "me" is an independent or absolute pronoun, which can be used without a verb to follow. These distinctions are carried out in vulgar English as strictly as in French, where the distinction between the conjoint "je," as in "je vois," and the absolute "moi," as in "c'est moi," = "it is me," is rigidly enforced. The difference between French and English is that French has also a true conjoint accusative "me," which, as in Basque, is incorporated into the verb. ‡ In vulgar English we hear not only "it is me," but also with the relative, as in "him that's here," where the polite language only tolerates "he." In the polite language we find such monstrosities as "it will give my friend and I great pleasure"—the natural result of the artificial reaction against "it is me."

And now a few words about the terminology. It will be observed that I have throughout avoided the names "possessive" and "objective." The distinctions implied are historical, and therefore the historical names should be retained. If the names of grammatical forms were to be changed whenever their meanings changed, we should have different names for every period and every language. It is much simpler to regard these terms as being what they really are, purely conventional names of forms whose meanings are often vague and sometimes nothing at all. Historically English nouns can only be said to have one case, the genitive. The unmodified base represents

* Old English, "hé c̅leete ȝám menn" and "hit l̅icode ȝám menn," where "ȝám men" = "homini."

† In Old English *hē* (he) has accusative *hine*, dative *him*, and *ȝē* (they) has acc. *ȝā*, dat. *ȝām*.

‡ As in "il me voit."

historically both nominative and accusative (possibly also dative in some cases), we may therefore call it the "common" case. Pronouns have three cases, nominative, genitive, as in "it is his," and dative. The question whether "his" in "his book" is a genitive, or a possessive adjective, is really an idle one, for the genitive is in all cases functionally identical with an adjective. If we disregard history, and take position as the criterion of case, we are able to distinguish doubtfully a subject and object case, the former corresponding to the old nominative, the latter sometimes to the acc., sometimes to the dat.

Pronouns.—Pronouns bear the closest analogy to proper names. They are nouns which, in themselves, only connote "human being," and in some cases sex also. When we hear that "he is coming," all we learn is that a male human being is coming, and we learn just as much from the proposition "James is coming." The main distinction is that pronouns are of general, proper names of special application, for, if the system of giving proper names were carried out perfectly, every one would have a name to himself, which would be shared by no one else. Pronouns are, therefore, even less significant than proper names: "he" may refer in turn to each individual man there is, if the grammatical structure of the sentence allows it.

All pronouns are relative—they always refer to some noun. "He" is quite as relative in signification as "who" is, and the two are really identical in meaning, the distinction being purely formal, viz., that a sentence beginning with "who" is always accompanied by another sentence containing some statement about the person to whom the pronoun refers, and until we have this sentence, we feel that the first sentence is formally incomplete. "He" is, therefore, relative in meaning, "who" in meaning and form also. "He is here" does not really convey any more information than "the man who is here," but it can stand alone, whereas the other cannot.

Adjectives.—Adjectives may be either special or general attribute-words. Special adjectives are "bright," "blue," &c., while such adjectives as "this," "that," which connote nothing but the attribute of existing in space, are general. Still more general are such adjectives as the definite article "the," which connotes nothing but the attribute of forming a member of a class, or something similar. Many of these general adjectives are at the same time pronouns when they stand alone, thus "some" alone is equivalent to "some human beings," while in "some men" it is simply an adjective, or, as it is sometimes absurdly called, an "adjective pronoun." Similarly in vulgar English "them" by itself is a pronoun, but before a noun, as in "them things," it is a general (demonstrative) adjective.

The two articles are often so devoid of meaning as to amount practically to nothing more than prefixes for forming nouns, although this is not carried so far as in French and German, where the definite article may be said to have hardly any meaning at all, being not only prefixed, as in English, to the names of things which only occur singly, such as "the sun," "the earth," but also to proper names and the names of abstractions.

Verbs.—The really characteristic feature of the English finite verb is its inability to stand alone without a pronominal prefix. Thus "go," "run," "fly," by themselves may be either nouns or verbs; if, for instance, the indefinite article is prefixed to any of them, it becomes a noun—"ago," "arun," "afly," are all nouns. But "igo," "werun," "theyfly," are verbs. With the help of other prefixes a great variety of verbal forms may be made without the slightest change of the primitive form. Thus "we'llgo" is future, "we'dgo" is conditional, "wedidgo" is a form of the preterite, &c. If for the pronoun a noun is substituted, the verb is recognised solely by its position after the noun in its common case, thus in "— the men run," there is nothing but the fact of "run" following the uninflected plural "themen" to show that it is a verb. Even when there is a noun preceding, the pronominal prefix is often used in common talk, especially among the uneducated; thus we often hear, instead of—"— my brother's coming hometo morrow," "— my brotherhe's coming." . . . The tendency to employ a pronominal prefix is also strikingly illustrated by the impersonal verbs, such as "itrains," "ithappens," &c., where the "it" is quite unmeaning.

These facts illustrate the peculiar complexity of English grammar, and the difficulty of attaining a just and adequate view of its characteristic features. In such a sentence as "— the men come," "come" is a verb mainly through its position, in "they come" because of the pronominal prefix, and in "hecomes" both because of the prefix and of the inflexional s.

It is important to observe that English has no infinitive, except from an historical point of view. "Come" by itself is, as we have seen, not necessarily a verb at all, still less an infinitive "mood," and it is certainly most in accordance with the instinct of those who speak English naturally to consider "come" simply as a base or common form of the verb, just as "man" is felt to be a common case.

The term "mood" is, of course, quite a misnomer as applied to the infinitive in any language, for the infinitive is nothing but a sort of nominal form of the verb. On the other hand, there are in English several forms of the verb which, on all sound analogy, ought to be included among the moods. These are the

emphatic "idogo," the negative "idontgo," the interrogative "doigo," the negative-interrogative "dontigo," the first of which is quite peculiar to English.

The inflected subjunctive is almost extinct in English. In form it is only in a few cases to be distinguished from the indicative, and its original meaning is so completely lost that English people have great difficulty in learning the proper use of the subjunctive in such languages as German and French, where it is still a living element of the language. We still employ it chiefly in a few stereotyped optative phrases, such as "God save the Queen," and mechanically after certain conjunctions. In the language of the vulgar it seems hardly to be used at all, and such constructions as "if I *was* you" . . . seem to be gradually spreading even among the educated.

Prepositions.—The combination of a preposition and its noun (or pronoun) is identical in meaning with an oblique case of a noun, that is to say, it is a compound attribute. The preposition itself is modified attributively by the noun, and the two together constitute an attribute of some other word. Thus in "he stood by," "by" is an attribute-word modifying "stood," in "he stood by the gate," "by" is modified by "the gate," which is virtually an adverb of "by," and the two together form a compound attribute of "stood." In this example the prepositional compound is equivalent to an adverb, but it may also qualify a substantive, as in "the church in the town," which is equivalent to "the town church," or, in German, "die städtische Kirche."

Sentence-words.—There are a variety of words which have the peculiarity of always forming a sentence by themselves; they might also be called isolated words. These words are: 1. The imperative mood of verbs, "come!" for instance, being equivalent to "I command, or ask you to come;" 2. The "adverbs" *yes* and *no*, which are equivalent to affirmative and negative propositions; and 3. The interjections, many of which, as, for instance, *alas!* from the adjective *lassus*, are quite erroneously described as inarticulate imitative sounds, and which have as much right to be considered parts of speech as the imperatives of verbs.

Concluding remarks.—It is of great importance to obtain a clear idea of the province of grammar as opposed to that of the dictionary—a subject on which considerable confusion of ideas prevails. The popular notion is that the business of a grammar is to explain *forms*, of a dictionary to explain *meanings*. But it is clear that the study of forms involves also a study of their meanings as well, and, indeed, the whole of syntax is nothing else but an investigation of the meanings of grammatical forms.

The real distinction is that grammar deals with the general facts of language, lexicology with the special facts. Thus the fact that "tree" becomes "trees" when we speak of more than one tree, is a general one, for it applies, with certain restrictions, to nearly all other nouns as well; but the fact that the combination of sound that constitutes the sound-group "tree" has the meaning we attach to it and no other, is an isolated one, and there is nothing in the sounds themselves or the way in which they are combined to necessitate one meaning more than another, while even if we were ignorant of the meaning of the word "tree," we should be able to recognise in "trees" the meaning of "plurality," if we met with it in an unambiguous sentence. If we had a rationally constructed Universal Language, in which every letter in a word would be significant and combined according to definite laws, so that the connexion between form and meaning would be at once evident, there would be no dictionary at all—everything would be grammar, and the dictionary would be simply an alphabetical index to the grammar.

The simple question, then, that we have to ask ourselves in determining the scope of the grammar of any language is, how does this language indicate general meanings? The answer to this question is the grammar. If the language chiefly employs what are conventionally termed "inflexions," its grammar will be mainly an "inflexional" one; if position, its grammar will be like that of Chinese, and, to a great extent, of English also, "positional." To assert that Chinese has "no grammar," or "no grammar *properly speaking*," as it is sometimes cautiously put, is simply an eccentric way of stating that it has no *inflexional* grammar.

An essential part of English grammar is *intonation*. An immense number of general ideas, both emotional and purely logical, are expressed in English by the rise and fall of the tones of the voice. The distinction between affirmation and interrogation, subject and predicate, doubt and certainty, &c., are all expressed either partly or entirely by intonation.

The following are, then, the essential elements of English grammar:—

1. Phonology, or an account of the formation of the sounds of the language, their combinations, &c.
2. Phonetic Synthesis, comprising Quantity, Force or Stress, and Intonation. (Voice-timbre, Expression, &c., belong rather to Elocution, which is a special branch of Grammar.)
3. Word Position.

4. Parts of Speech, Inflexion, Agglutination, &c. (including all that is commonly understood as "Grammar.")

The relation of form to meaning may, of course, be considered in various ways. The form may first be considered purely as form, as when we analyse the various degrees of quantity, the exact intervals of intonation, &c., and we may then either consider the various meanings attached to each form, or, starting from the meaning alone, determine what forms are used to express it. In a full grammar all these arrangements must be represented, partially at least. The facts must also be so stated that due prominence is given to the really important elements. Archaisms and fossilised forms must be duly subordinated to the living means of expression.

The different *strata* of the formative elements must also be distinguished. Thus, while the combinations of noun and preposition would be treated at full under the same category as inflexion—"of man" and "man's," for instance, coming together—the traditional inflexions would also be grouped together separately, apart from the later agglutinations. Even merely *nascent* forms and tendencies would also be grouped together separately. It is, for instance, important to observe the tendency to indicate the singular of nouns by prefixes, leaving the plural unmodified; "man," for instance, means "man in general," or, in short, "men," while "the man," or "a man," has a definitely singular meaning. It is of course true that we can also say "the men" in the plural, but it is at least conceivable that in a more advanced stage of English the use of the articles may be confined entirely to the singular, and in that case it is highly probable that the plural inflexions would be entirely lost, so that the distinction between singular and plural would be denoted entirely by prefixes. Compare the French singulars "un chat," "le chat," with the plural "des chat(s)," "les chats."

If English grammar were treated in this way, it would give the student just notions not only of the structure of his own language, but also of language generally, and a solid foundation would be laid for historical and comparative philology. The ordinary grammars, which ignore many of the most characteristic features entirely, and subordinate others to purely exceptional ones, not only give the student an entirely erroneous idea of the structure of English, but also train him to habits of erroneous and superficial observation, the evil results of which are seen every day both in scientific philology and in the practical acquisition of foreign languages.

DISCUSSION.

Mr. TYLOR said that Mr. Sweet's views deserved the most careful consideration, affecting as they do several important points of anthropology. Mr. Sweet's definition of a word as made not by break of sound but by a stress or accent, is in agreement with the views of W. von Humboldt, and fits with Cicero's remarks on word-accent. It has been noticed before that English and other modern languages are capable of agglutinating or incorporating formations like the North American languages. Thus Dr. Latham instances such phrases *catch'em*, *je l'aime*, as being in fact incorporated or holophrastic words. To adopt this part of Mr. Sweet's views would be, in fact, classing English as an agglutinating language. In the speaker's opinion, the common classification of languages, as isolating, agglutinating, and inflecting, requires thorough re-examination and reform, a step to which Mr. Sweet's acute remarks will naturally contribute.

With regard to the plan of a classified vocabulary of ideas, Mr. Tylor considered that it would be of much service to the Society, as guiding travellers in their selection of savage vocabularies, so as to obtain better representations than at present of the stock of words.

The President and others joined in the discussion.

The Director then read the following papers, in the absence of the author, Mr. W. J. Knowles:—

On the CLASSIFICATION of ARROW HEADS.

ACCORDING to the leading authorities there are four or five types of arrow heads. Sir John Lubbock adopts the five varieties of Sir William Wilde, viz., *triangular*, *indented*, *stemmed*, *barbed*, and *leaf-shaped*. Mr. Evans, with whom is Colonel A. Lane Fox, arranges those of Great Britain under four leading types, *leaf-shaped*, *lozenge-shaped*, *tanged*, or *stemmed*, and *triangular*. Both these arrangements, I think, do either too much or too little. Arrow heads, in my mind, could as well be brought under three classes, the tanged, indented, and the so-called leaf-shaped. We could include in the stemmed all those having a central tang or stem, whether with or without barbs. Under the name "*indented*," I believe we could include the few that are triangular, looking on them as not having got the length of being notched, and all others having no indentation would come under the term "*leaf-shaped*."

If we arrange those arrow heads having a central tang into two classes, stemmed and barbed, the classes are very far from being equivalent, as those wanting barbs are very scarce com-

pared with the barbed variety, and the change from the one condition to the other is so gradual, that I am inclined to regard the barbless condition as accidental; besides we often meet one side of an arrow head barbed and the other barbless. The two classes, triangular and indented, appear to me to be included by Mr. Evans, under the one name triangular, and the type arrow head figured by Sir John Lubbock as triangular is slightly indented, while a more deeply indented one represents the type indented. If the term triangular is used to include all arrow heads having a triangular form, whether indented at the base or not, I do not object to the term; but if we keep up both names, triangular and indented, then I should say, apply the name triangular only to purely triangular forms, and indented to those hollowed at the base, whether much or little. The purely triangular form of arrow head is no doubt scarce, but it bears fully as large a proportion to the indented as the barbless does to the barbed.

The leaf-shaped includes several forms, as well entitled to be classed as types as the barbless or triangular. There is, for instance, a form rounded at the base, and pointed at the small end, another having two points, but still ovate in outline. Another which we could describe as lanceolate; and still another very well marked variety, pointed at the broad end and blunt at the narrow end. The passage from the leaf-shape into a kite-shape, where the edges of the broad end often project outwards, and those of the small end incline inwards, and then into the pure lozenge form, is quite gradual. The true lozenge form, that is, having four edges of equal length, is rather scarce in Ireland, though not rare, but Mr. Evans includes under the term lozenge-shaped, all arrow heads having four straight edges, whether equal or unequal.

The term leaf-shaped is not a very appropriate type name, as some of the other forms come as near in shape to leaves as the so-called leaf-shaped arrow head. In describing leaves we apply the term sagittate to describe such forms as have a resemblance to a very extensive class of indented arrow heads, and some of the tanged and barbed arrow heads have a close resemblance to a cordate leaf. I think *ovate* and *lanceolate* would be more suitable terms to apply to the so-called leaf-shape.

It also appears to me that there are two better marked types among stemmed arrow heads than the barbed and barbless. It will be observed that the smaller type of stemmed arrow heads have the stem and barbs of nearly the same size and length; in fact they are a sort of leaf-shaped or triangular arrow heads with two indentations, whereas in the larger form the tang projects beyond the barbs. This variety is called three-toed by

collectors in county Antrim. You scarcely ever find the larger kind having the same form as the smaller one.

There are also well-marked varieties among indented arrow heads. One kind has nicely pointed triangular barbs, another has a little projection on the inner side of the barb, and a third has the barbs or wings that project on each side of the indentation terminating in a straight edge, but I fear it would only confuse matters to give all those varieties type names, and yet if names are kept up for varieties having as little value we must introduce more type names, otherwise the classification is incomplete. Laying the smaller distinctions aside, I think we might, by a very small alteration, retain most of the old names with which we are familiar and yet improve matters. I should say we might drop the term barbed as Mr. Evans has done, and call all those having a central tang or stem, stemmed, keep up the term indented for those hollowed more or less at the base, and triangular for purely three-sided arrow heads. Supply the terms ovate and lanceolate instead of leaf-shaped, add kite-shaped, and apply the term lozenge-shaped only to those forms that have four straight edges of equal length. Our classification would then be—

Stemmed,
Indented,
Triangular,
Ovate,
Lanceolate,
Kite-shaped,
Lozenge-shaped.

Or if the term leaf-shaped has got too great a hold to be given up, we can retain it instead of the two terms I would introduce, and our classification would then be—

Stemmed,
Indented,
Triangular,
Leaf-shaped,
Kite-shaped,
Lozenge-shaped.

I do not enter into the question of which was the first form. I could show them equally rude of all forms. I should say that examples of high finish are most frequently met with in the indented variety.

Additional Remarks on the FIND OF PREHISTORIC OBJECTS at PORTSTEWART.

At the Belfast meeting of the British Association I gave an account of the discovery of prehistoric remains at Portstewart in the county of Londonderry, which consisted of arrow heads, scrapers, hammers, cores, flakes, bone implements, and bones of the horse, ox, pig, dog, &c., together with edible shells, all mixed up together, and, apparently, of the same age. I stated that the objects were found in pits excavated by the wind among sand-hills. That black layers appear on the sides of those pits from 10 to 30 feet below the present surface, and I gave it as my opinion that those layers represent the surface when the place was occupied by the flint implement makers, and that as the sides of those pits crumble down new objects drop out. The place was known only to myself and one or two friends previous to the meeting of the Association in Belfast, but immediately after, the Ballymena Naturalists' Field Club under my guidance examined it, and obtained a considerable number of objects, not only in the pits but by digging in the black layers, and expressed themselves fully satisfied with the conclusion I had come to.

Without unnecessary repetition, I may say that the number of flints more or less manufactured amounted at that time to about 500. Since then there have been many explorers, and the number of objects which have been found has considerably increased. Even so late as the 20th of July last two gentlemen and myself found in less than four hours' search 3 arrow-heads, 2 beads, 30 or 40 scrapers, and several hammer-stones, besides bones, some of which bore marks of cutting or sawing. At the meeting in Belfast I was able to exhibit a small piece of, what I believed to be, a bone bracelet neatly cut and bored, though I had not found it when I prepared my paper. Though I had not found any trace of metal, I stated that I doubted if it could be made by a flint implement, but I am now inclined to believe that it could. Since then the most remarkable find has been a number of very small stone beads. About a dozen have been found altogether, and all within a few yards of the same spot. They are concave on the one side, and convex on the other, and have a resemblance to some kinds of small shirt-buttons. I at first thought the concavity had been formed by grains of sand rotating on the upper surface, but I have got other beads from various parts in county Antrim similar in appearance, and therefore I believe they were made in this form. It appears to me that one small bead has been cut out of a piece of stone, thus leaving a concavity for another bead of larger

size. It is possible they may have formed part of a necklace that was lost or they may have been placed in an urn at the time of an interment. Several pieces of broken pottery have been found at the same place, which would favour this view. Another addition has been one of those so-called oval tool-stones. Sir John Lubbock in "Prehistoric Times" doubts if these stones belong to the Stone Age, but I see no reason to doubt that they are of the same age as the flint implements found at Portstewart and in the country adjoining, and have been used in their manufacture. One reason for saying so is the finding of this one in connexion with the flint implements, and another reason is the similarity of the markings on the ends of some of those stones to those on the hammer-stones found at Portstewart which were undoubtedly used in manufacturing the flint. I am equally convinced, however, that the hollows on the sides of the tool-stones were not made intentionally for the convenience of the finger and thumb, but were made for some special purpose that had nothing to do with the use of the stone as a tool—the stone being only used as a tool *if hard enough for the purpose*. In fact the use of those stones as tools was in my mind a secondary idea. This is shown clearly, I believe, by many stones which have such pits or hollows showing no signs of having been used as tools, and also by being too soft in many cases, as well as being too large and too small for such a purpose. I have one so large that it severely taxes my strength to lift it—it must at least be three-quarters of a hundred weight, and I have others, again, about an ounce in weight.

The next thing I wish to draw attention to is the cut bones. I have one end of a bone which has been knocked off with a stone after the bone was cut round, about half through on the one side, and through into the hollow of the bone on the other. It evidently has not been cut deep enough, as a splinter has come off with the end. I have another end of a bone which appears to have been cut clean off, and a piece of deer horn not only cut through at both ends, but having a tine cut off at the side. It appears to me that the ancient people wanted the middle of the long bones for some purpose, and they therefore went to the trouble of cutting off the ends. It also appears that they have been cutting the antler of the deer into lengths, and utilising every bit of it, otherwise they would not have taken the trouble of cutting off a tine. Some people have tried to persuade me that flint could not cut bone so well as it appears to have done, if that was the only kind of implement employed on the bones from Portstewart, and in order to test the cutting power of flint I tried an ordinary flake on a piece of common beef-bone, and I found by using it as a saw, with a little water,

that it was a powerful implement, and it left marks very similar to those on the bones I collected. I made several deep cuts in a very short time; but to try what I could do in a given time I took a new part of the bone, and although I frequently cleared out the matter that was clogging the flake, washed with water, and stopped occasionally to examine how I was getting on, I cut through into the hollow of the bone in 14 minutes. I also bored a hole through the bone with a piece of flint, and I am therefore satisfied the hole in the small piece of bracelet could have been made by a flint tool.

Although quite sharp when I commenced cutting, the edge of the flake gradually became blunted without much diminishing its cutting power, and I was much struck with the resemblance it bore to flakes from Larné and other places, the edges of which I, and I believe others, had supposed to be blunted by water-wearing, so much so that I am inclined to believe that those supposed water-worn edges were made by cutting or sawing. If I am correct in this, flint flakes may have been of more importance as tools than we had previously supposed, and they may have been struck off expressly for tools, and not merely to furnish the raw material or rude splinters from which tools were to be made.

Most of the objects referred to in the papers were exhibited.

The President then announced that the Anniversary Meeting of the Institute would take place on January 30th, at 8 P.M.

ANNUAL GENERAL MEETING.

JANUARY 30TH, 1877.

Colonel A. LANE FOX, *President, in the Chair.*

The notice convening the meeting was read by the Director.

The minutes of the last Annual Meeting were read and confirmed.

Mr. M. Moggridge and Mr. G. M. Atkinson were appointed scrutineers of the ballot, which was then declared by the President to be opened.

The TREASURER then read his financial Report for the year ending 31st December, 1876, and said in presenting his statement of receipts and expenditure for that year, that the indebtedness of the Institute had been reduced during the last

THE ANTHROPOLOGICAL INSTITUTE OF GREAT BRITAIN AND IRELAND.

Statement of Accounts for the Year ending 31st December, 1876.

RECEIPTS.

	£	s.	d.
BALANCE, 1st January, 1876:	93	18	7
At Bankers, Roberts and Co.			
In hand, Office	11	10	2

SUBSCRIPTIONS:		
Paid to Roberts and Co., for 1876	.....
" Collector	"	Subscriptions due Jan., 1875
" "	"	Life Compositions
" "	"	In advance
" "	"
ILLUSTRATION FUND:		
Donation from Sir J. Lubbock	.....

SALE OF PUBLICATIONS:	
Messrs. Trübner and Co.: Journal, June—December, 1875,.....	22 10 10
December—June, 1876,.....	53 1 5
Other Publications of Institute,.....	5 19 11
Messrs. Longmans and Co.	8 12 8
At Office of the Institute:	
Journal	3 19 5
Other Publications of Institute,.....	19 5 2
	<hr/> 113 9 5

PAYMENTS.
 RENT, to 29th September, 1876.....
 PRINTING:

£	s.	d.	£	s.	d.
			108	5	0

488

LITHOGRAPHY:
 Kell, Rivington, and McClure to Dec., 1875
 Kell. Account for March quarter, 1876 ...
 Whitemen, Irons, and others, to Dec., 1876

SALARIES:
 Secretary, to June, 1876.....
 Clerk
 Collector's Commission

POSTAGE—Journal
Letters, Circulars, and Post Cards
ADVERTISEMENTS—Messrs. Street, to Dec., 1875

HOUSEKEEPER:
Ayres, gratuity
Coals, Lights, &c.
Parcels, Repairs, and Sundries.....

CASH BALANCES:	
At Banker's	
In hand	

We have examined the above Cash Receipts and Payments, and find the same correct.

(Signed) CHARLES HARRISON.
W. I. DISTANT.

year from £243 13s. to £105 3s. 9d., after allowing for the cash balances. This was due in part to the settlement of a disputed account, and to the saving in refreshment and salaries. There has also been a considerable diminution in some other items of expenditure. The proceeds arising from the sale of the Journal, and other publications of the Institute, had been considerably in excess of any former year. The amount realised by the sale of the Journal was nearly £80. The amount from sales in the half-year ending December 31, 1876, will be more than in the corresponding half-year in 1875. The sum likely to be realised from over-due subscriptions is estimated at about the same sum in both years.

Mr. MOGGRIDGE moved and Mr. CHARLESWORTH seconded the adoption of the Report, with a vote of thanks to the Treasurer for his labours and success in improving the financial state of the Institute.

Carried unanimously.

The Director then read the Report of the Council for 1876:—

REPORT of COUNCIL of the ANTHROPOLOGICAL INSTITUTE of GREAT BRITAIN AND IRELAND for 1876.

THE Institute has held thirteen ordinary meetings, one special, and one anniversary meeting during the year, at which the following communications were read:—

1. On the Maori Race of New Zealand. By W. S. W. Vaux, Esq., F.R.S.
2. On Stone and other Implements from New Zealand. By Dr. James Hector, F.R.S.
3. On the Origin of the South Sea Islanders. By Rev. Wyatt Gill, B.A.
4. On some Traditions of the Hervey Islanders. By Rev. Wyatt Gill, B.A.
5. The Tombs in the Island of Rotumah. By W. W. Wood, Esq.
6. On the Ethnography of Scotland. By Rev. John Earle, M.A.
7. Remarks on Stone Implements exhibited. By Capt. M. Campbell and A. W. Franks, Esq., F.R.S.
8. On the Sarmateæ. By H. H. Howorth, Esq., M.A.
9. On the Pelagosa finds. By Vice-Consul Topick: translated by Capt. R. F. Burton.
10. On Japanese Mythology. By E. Burnet Tylor, Esq., F.R.S.
11. On the Term Religion as used in Anthropology. By W. L. Distant, Esq.
12. On the Inhabitants of New Guinea. By Dr. Comrie, R.N.
13. On the Politics, Religion, and Commerce of Old Calabar. By J. B. Walker, Esq.
14. On the Origin of Minerals. By Alfred Tylor, Esq., F.G.S.
15. On some Apparent Coincidences of Custom and Belief in Chaldæa and Western Europe. By A. L. Lewis, Esq.
16. On Prehistoric Names of Weapons. By Hyde Clarke, Esq.
17. On the Ethnography of the Cimbri. By Canon Rawlinson.
18. On the Hunebedden. By Dr. Lubach.
19. On the Anthropology of Central Africa. By Lieut. Cameron, R.N., C.B.
20. On the Natives of Nicobar Islands. By W. L. Distant, Esq.

21. On a Collection of Skulls from Mallicollo and Vanikoro. By Prof. George Busk, F.R.S.
22. On Signor d'Alberis' Explorations in New Guinea. By A. W. Franks, Esq., F.R.S.
23. On the South Sea Islanders. By W. L. Rankin, Esq.
24. On the Worship of Siva in Central America. By Hyde Clarke, Esq.
25. On Flint Cores. By Dr. Gillespie.
26. On Chalk Marks at Cisbury. By J. Park Harrison, Esq., M.A.
27. On the Term Mediterranean. By J. Bell, Esq.
28. On Excavations in the Black Burgh Tumulus, 1872. By Col. A. Lane Fox, F.R.S.
29. On Excavations in Seaford Camp. By Col. A. Lane Fox, F.R.S.
30. On Excavations in Seaford Cemetery. By F. G. H. Price, Esq., and John E. Price, Esq.
31. On the Votive Statuettes from Tanaga. By Col. A. Lane Fox, F.R.S.
32. On the Laplanders. By A. Humboldt and V. H. V. Horek.
33. On the Tribes of British Guiana. By the Rev. W. Harper.
34. On the Javanese. By M. Kiehl.
35. On the Ethnology of the Germans. Part I. Saxons of Nether Saxony. By H. N. Howorth, Esq., M.A.

Twenty-seven ordinary Members have been elected during the year.

Commander Cameron, R.N., C.B., D.C.L., M. Emile Cartailhae, and Mr. Ernest Chantre have been elected honorary members, and the Rev. W. Wyatt Gill corresponding member.

Ten ordinary members have withdrawn since the last anniversary meeting.

The Institute has lost, through death, Viscount Amberley, Mr. R. M. Nunn, Dr. Richard King, Mr. T. G. B. Lloyd, Sir Duncan Gibb, Sir Richard Hanson, Sir John Cordy Burrows, Dr. Lonsdale, Captain Rowcroft, Mr. D. W. Nash, Mr. L. A. Lucas, Mr. David Forbes.

M. Karl Ernst Von Baer, hon. member; Mr. A. C. W. Lennox, special member; Mr. W. Bollaert, corresponding member; and Mr. F. J. Draper, local secretary.

The names of four members have been removed from the list for non-payment of arrears of subscription.

The following are the names of donors to the Library and Museum during the past year:—

The Society of Arts and Sciences, Batavia; F. W. Rudler, Esq.; the Geologists Association; the Editor *Revue Scientifique*; Royal Asiatic Society of G.B. and I.; Royal Geographical Society; Canadian Institute; Dr. Topenard; J. J. Monteiro, Esq.; Royal Society; Editor of *Nature*; Messrs. Longman and Co.; Moscow Imperial Society of Naturalists; C. Fitzgerald, Esq.; Smithsonian Institution; the Editor, *Matériaux pour l'Histoire de l'Homme*; Royal Historical and Archaeological Association of Ireland; Berlin Anthropological Society; Prof. F. V. Hayden; the Editor *Archiv. für Anthropologie*; J. Boulton, Esq.; Hungarian Academy of Science; East Indian Association; W. E. Stanbridge, Esq.; Paris Anthropological Society; A. L. Lewis, Esq.; Geological Society of Vienna; Bengal Asiatic Society; Vienna Imperial Academy of Sciences; American Philosophical Society; Society of Biblical Archaeology; Ettore Regalia; John Evans, Esq.; Joseph Sabine, Esq.; Thomas Croft, Esq.; B. Stanton, Esq.;

Social Science Association; Royal United Service Institution; R. H. Tiddeman, Esq., Royal Society of Tasmania; Rev. Henry Stretton, M.A.; Krakowie Academy of Sciences; Belgium Royal Academy of Sciences; C. Stewart, Esq.; Scotland Society of Antiquaries; George Harris, Esq., LL.D.; Lieut. R. H. Armit, R.N.; Peabody Academy of Sciences; Bombay Branch of the Royal Asiatic Society; Berwickshire Naturalists Field Club; London Society of Antiquaries; Glasgow Philosophical Society; Boston Society of Natural History; Dr. N. M. Hentz; Lieut. G. M. Wheeler; Dr. H. V. Hölder; New Zealand Institute; Royal Colonial Institute; Asiatic Society of Japan; Imperial Academy of Sciences, St. Petersburg; Anthropological Society of Spain; Manx Society; M. L. Mathieu; Congrès International d'Anthropologie d'Archéologie Préhistoriques; Dr. J. H. Baxter; Royal Society of Literature; Royal Institution of Cornwall; Devonshire Association; Board of Admiralty; Registrar-General for New Zealand; the Right Hon. Lord Arthur Russell, M.P.; Prof. Agassiz; St. Louis Academy of Science; State Board of Health, Massachusetts; E. Canton, Esq., F.R.C.S.; Rev. A. C. Geekie, D.D.; E. W. Brabrook, Esq.; Literary and Philosophical Society; Royal Society of New South Wales; Manchester Public Free Library; Dr. James Hector, F.R.S.; Mr. Moggridge.

Colonel Lane Fox moved, and Mr. A. L. Lewis seconded the adoption of the Report. Carried.

The PRESIDENT then read his Annual Address.

I regret that press of business has prevented my doing more than review cursorily the work of the past year, adopting the same classification as in the address of the year before, and including the fourth number of Vol. V, which was unavoidably omitted on that occasion.

DESCRIPTIVE ETHNOLOGY.—*Seven Papers.*

1. "Anthropological Notes on New Guinea," by Dr. Comrie, R.N. These are notes made by Dr. Comrie, when serving as surgeon on board H.M.S. "Basilisk," in 1874, and they relate to certain tribes between East Cape and Astralobe Bay, which have not previously come in contact with Europeans. The paper was accompanied by an exhibition of 15 skulls of the Aborigines, and numerous works of art and implements obtained by the author. Dr. Comrie's observations lead him to believe that the peculiar growth of the hair of the Papuans, like the tufts in a shoe brush, is caused by the mode of dressing, and is not congenital. Several sections of the hair of these people, microscopically examined, showed that it presented the long oval section already noticed by Dr. Pruner Bey, and which is more or less

common to all the black races of mankind. Dr. Comrie noticed that in New Guinea and some of the other islands, the coast tribes are fairer, or rather less dark than the inhabitants of the interior, which he attributes to local causes, such as feeding upon fish rather than to an admixture of race. This opinion receives some confirmation from an account of the crew of the "Strathmore," which has since appeared in the September number of "Blackwood's Magazine," by Mr. Wordsworth, who was wrecked in 1875, upon one of the rocks of the Twelve Apostles, an island of the Crozet group, and spent upwards of six months upon the rock. He says that in less than four months after feeding upon penguin's eggs, the complexion of the shipwrecked people entirely changed: black hair turning brown or red, and that of fairer people quite flaxen. All the birds of the island also were quite white. The hair and complexion of these people, however, regained its original colour in less than a month after being removed from the island. Considering the facilities afforded to coast tribes for intermixture with fairer races, and some other circumstances to which I alluded in my remarks upon Dr. Comrie's paper, I think we must still hesitate before accepting food and climate as the immediate cause of the change of colour observed. The facts, however, recorded by Dr. Comrie, with his interpretation of them, are well worthy of the attention of anthropologists.

2. "Notes on the Politics, Religion, and Commerce of Old Calabar," by James B. Walker, Esq. Amongst other customs related by the author, their ideas respecting a future state are of interest. They imagine the condition of the departed spirit to be pretty much the counterpart of what it has been here. They return and visit the scenes they formerly occupied, inflicting sundry punishments upon those who have failed to show them proper respect, more especially those who have omitted to make proper offerings at their obsequies. The author has seen as much as £100 worth of goods thrown into the grave of a chief. The survival of the custom of the sacrifice of wives and slaves at death, which formerly existed, but has been abolished through

the influence of the missionaries, has here taken the form of imprisonment during the period of the funeral obsequies, which sometimes last several years. During this period the prisoners are forbidden to hold any intercourse with the outer world, or to wash their bodies or change their raiment, and numbers who have no friends to supply them with the necessaries of life die during the period of incarceration.

This transition phase of the superstition of human sacrifices appears to me to be one which is very likely to have been followed in other countries, for whilst the sentiment of humanity would be vindicated by the abolition of death, the religious fanaticism of the people would be appeased by keeping the victims out of the way until the time of mourning had passed by and been forgotten.

3. "On the Anthropology of Central Africa," by Lieutenant Cameron, C.B., R.N. The observations of Lieutenant Cameron upon the people of the country he passed through, related in the simple style of a sailor, and without pretension to anything more than that most valuable of all anthropological requisites, the truth and accuracy of the narrator, are of special value to us, from their affording the first account of the inhabitants of all that large tract of Central Africa which lies between the 4th and 12th parallel of latitude, which he has been the first traveller to explore. He identifies the Wanyamuesi with the Hovas of Madagascar, a people of Malay extraction. He tells us of a tradition prevalent in these parts, that the Kafirs are descended from heathen Arabs before the time of Mahomet. Manuema is, *par excellence*, the black country of Africa, where smithies 50 feet in length by 30 wide, having as many as 20 bellows at work in them, are to be found, producing from 150 to 200 lbs. of metal at a single smelting, and the shapes of the weapons which he has brought home from thence are such as to prove connection with Angola and the Gaboon. On Lake Mohyra he found the people living upon platforms supported upon piles, which were the only lake dwellings he met with in his travels. Stone implements, properly so called, were not in

use in any part of the region he traversed, nor could he discover any trace of their employment in earlier times ; this, however, will not be regarded by anthropologists as evidence of the non-existence of a stone age in these parts.

The only relics of an earlier civilisation which he met with in his travels, consisted of a number of small pieces of copper, in the form of a St. Andrew's Cross, which are dug up near the Lualaba. Similar crosses of larger size are still used as ingots for the export of copper from this region. Lieutenant Cameron pays a high tribute of praise to the accuracy and fulness of Captain Burton's narratives, which he describes as a verbal photograph of the countries through which he passed. This testimony to Captain Burton's merits is especially acceptable to us, who know that amongst modern travellers he is one of the few whose powers of observation have been stimulated by profound anthropological research.

4. "On the Inhabitants of the Village of Katau, New Guinea, nearly opposite Cape York, and of Kiwai, 25 miles from the entrance to the Fly River," by Signor S. M. D'Albertis. The houses of Katau resemble those of the north-west Coast of New Guinea, and skulls are suspended near the entrance. On the graves both provisions and bows and arrows are deposited, which custom prevails also on the west of New Guinea. The colour of the skin here is said to be copper-coloured ; not so black as at Cape York. The hair when cut short, is seen to be equally distributed over the scalp, but assumes a tufted appearance when it commences to grow, owing, no doubt, to its growing in curls. This agrees with Dr. Comrie's observations. Sr. D'Albertis believes the population to be much mixed upon the coast, and thinks that the typical peculiarities of the New Guinea race will not be known until the interior is better explored. At Kiwai the hair is also distributed equally over the scalp. In colour the inhabitants resemble those of Katau, but are a shade lighter. The average height is given at 5 feet 8 inches, but it is not stated whether this applies to the males or females. Like the people of Katau, the practice of hunting for heads prevails ; but

here they have a peculiar method of preserving them, covering the face with a mask, formed from a preparation of wax and resin. The eyes are represented by coarse shells, and the interior of the skull is filled with stones, hard seeds, and pumice-stones, kept in by dried grass. When swung about these produce a rustling noise, from which it is inferred that they are used in dances. A skull similarly prepared was sent to me by Commodore Goodenough, from Mallicollo, and this skull was also filled with hard seeds. Sr. D'Albertis is still travelling in New Guinea, and it is probable that further information will be received from him.

5. "On the Physical Condition of the Laplanders," by Alexander v. d. Horck. The Laplanders are divided by the author into the nomadic, or mountain, and the sea, or fish Laps. The former are spread over Norwegian, Swedish, and Finnish Lapland, and their stature is given at 1.5 metres, but as it is not stated whether this applies to the males or females, the figure is of no scientific value.

The current opinion that all blonde people belong to the Indo-Germanic race, whilst the Turanians are dark, is not borne out by the observations of the author, who found that many of the Laps are blonde, having golden hair and blue eyes. Although the majority of the Laps belong to the Lutheran Church of Scandinavia, the survival of their ancient faith is shown by their belief in the efficacy of mystic charms. An interesting account is given of the tumuli in which their ancestors are buried, sometimes packed up in a kind of sledge, and at others wrapped up in layers of birch bark, ornamented with curious drawings of the bear, wolf, and reindeer, as well as pictures representing the former life of the Laps. We may notice also as interesting, the survival of the custom of burying the dog with the dead; a kind of snail shell, called *hundsjael* (or dog soul) is buried in place of the animal itself, which is of great value to the Laps.

6. "Notes on the Javanese," by A. H. Kiehl, Esq. The inhabitants of Java consist of two branches, the Malays, con-

stituting one branch, and the Madurese and Ballinese the other. Notwithstanding many points of resemblance in colour and stature, they are easily distinguished by physical peculiarities—their manners and customs are very fully described.

7. "On the Inhabitants of the Admiralty Isles," by H. N. Moseley, Esq., late naturalist on board H.M.S. "Challenger." The examination of the island made by the expedition was confined to the extreme north-western portion of the northern coast of the main island in the neighbourhood of Nares Bay.

The information contained in this valuable paper is enhanced by the fact that previously to the visit of the "Challenger" in March, 1875, no European had ever landed in the island. The natives are described as being darker than the Papuans of Humboldt Bay, New Guinea, and the young are lighter than the adults. The hair of the Papuans of Humboldt Bay appears to be coarser, but in other respects identical with that of the Admiralty Islanders. The author gives a detailed account of the expression of the countenance of natives under the conditions of rage, suspicion, laughter, grief, &c. An exhibition of the objects obtained by Mr. Moseley in the Admiralty Isles showed unmistakeable connection with the arts of the New Guinea people described by Dr. Comrie, many of the ornaments being absolutely identical.

ARCHÆOLOGY—*Thirteen Papers.*

1. "On a Skull found in some Pits exposed by a Railway Cutting at Fulbourn," by Hooper May, Esq.

2. "On a proposed International Code of Symbols for use in Archæological Maps," proposed by Monsieur Ernest Chantre and communicated by John Evans, Esq., F.R.S. This code of symbols has been drawn up by M. Ernest Chantre, and is intended to introduce as far as possible a uniform system of marking prehistoric remains throughout Europe. The code appears to be satisfactory upon the whole, although some trifling improvements might perhaps be suggested.

It would be very desirable that some such system should be

introduced into our Ordnance maps. Having had frequent occasion to use them for Archæological purposes, especially the 25-inch map, I have found them to be very defective in this respect, many prehistoric objects being omitted, and others wrongly marked. The Officers of the Royal Engineers employed on the survey are usually glad to receive suggestions from Archæologists, and on one or two occasions when I have communicated with them on the subject, a non-commissioned officer of Engineers has been sent to make the necessary corrections, but an immense number of interesting objects are omitted, and as the 25-inch map is being proceeded with rapidly, the opportunity is being lost. It would be desirable that a competent Archæologist should be attached to the Ordnance Survey, and the attention of Anthropologists may be usefully directed to this matter.

3. On the "Tombs in the Island of Rotumah," by W. W. Wood, Esq. The structure figured in the illustration accompanying Mr. Wood's note appears to resemble the platforms described as existing in Easter Island, Marquesas, and the Sandwich Islands, and which are not unlike similar structures in Central America: other tombs, however, are described in Rotumah, which resemble more nearly the cromlechs of Europe.

4. On the "Animal Remains found in Cissbury," by Professor Rolleston, F.R.S. It is to me a very satisfactory circumstance that the careful study of the animal remains which Professor Rolleston has now had leisure to make, should confirm so fully the conclusions which upon other grounds I had come to as to the relative antiquity of the several parts of this work.

The absence of the dog, Professor Rolleston observes, in these later discoveries in Cissbury, would be remarkable did we not bear in mind the short time the pits remained open, which is proved amongst other evidence by the paucity of animal remains, and for the same reason perhaps the absence of the *Bos primigenius* which, as well as the dog, were found in the pit previously excavated by Mr. Tyndal, may be accounted for. Nor does the wild boar appear in any of these later excavations.

All the bones of horse found, were from superficial deposits, from which fact, though affording of course negative evidence only, Professor Rolleston argues that had it been domesticated by the original excavators of the pits, we should have obtained some osteological evidence of their success lower down.

In the skeleton shaft, the fact of the human bones being entire, whilst those of the animals associated with it were broken is significant, as showing that the two must have found their way into the pit through different causes. Professor Rolleston confirms in the fullest manner, by means of the animal remains, the relatively greater antiquity of the shafts to the entrenchment, pointing out that the snails found in the former must have crawled down the sides of the shaft when it was open, most of them having their opercula attached to them, and before the red deposit of the bottom of the ditch had formed over them. The paper by the careful attention that is devoted to the anatomical details of the human and other animal remains, adds greatly to the scientific value of the discovery. Of the details of the skeleton it is unnecessary to say much, the relatively large size and cubic capacity, amounting to 105 inches, of this undoubtedly prehistoric female skull of the stone age, will be noted with interest, exceeding as it does the immense majority of the male skulls cubed and recorded.

5. "Stone Implements from Honduras and Turks and Caicos Islands," by Captain Melfort Campbell, with remarks by A. W. Franks, Esq. The implements resemble in character others which are in different collections from Honduras. A letter from Mr. George Gibbs, a resident in Turks Island, Bahamas, suggests that the resemblance of the stone implements found in the West India Islands to those of Yucatan leads to the inference that the Carib inhabitants of these islands migrated from thence rather than from the north. I believe, however, that the connection between Florida, the Mississippi and Central America, can be demonstrated by means of art forms. The stone implements in Turks Island are supposed by the natives to be thunderbolts.

6. On the "Hunebedden or Cromlechs in Holland," by D. Lubach, M.D., giving a more detailed account of some of them than has hitherto appeared.

7. "Note on some Human and Animal Remains found at Bath," by Miss A. Buckland.

8. On the "Use of Flint Cores as Implements," by Dr. Gillespie. The author believes that from the flat top of the flint cores being frequently at an angle with the facets, and from the marks of abrasion found on the top corners, they may have been used as planes. That some of them may have been so used is not in my opinion improbable, but the abrasion at the corners may in most cases have been caused by the splintering of the flint when the flakes were struck off, and the angle formed by the flat top with the facets is, with very little doubt, accidental.

9. "On Marks formed upon Chalk at Cissbury," by J. Park Harrison, Esq., in which Mr. Harrison expresses his belief that certain scratches found upon the side walls of the galleries represent an archaic character of some kind. I have in the discussion upon this paper stated my conviction that Mr. Harrison's hypothesis is not proved.

10. On the "Black Burgh Tumulus, Brighton," by Col. A. Lane Fox. The chief question raised during this investigation was as to the kind of pottery in use for ordinary household purposes during the bronze age of the tumuli. Pottery of a superior quality to that employed for cinerary urns was probably in use at that time for ordinary purposes, but it is most likely that the turned pottery found in this tumulus belonged to a secondary interment of a later period. The examination of this tumulus confirms the previous investigations of Canon Greenwell, by showing that a small triangular knife dagger is the only kind of bronze weapon, except the plain triangular axe blade that is usually found in the tumuli of this age in England. The question as to the uses of certain cylindrical or basin-shaped holes in the chalk floors of tumuli was also discussed.

11. "Excavations in the Camp and Tumulus at Seaford,

Sussex," by Col. A. Lane Fox. The excavations carried on with the assistance of Mr. Park Harrison and Captain Dillon, showed that a tumulus within and almost contiguous to the rampart contained stone implements only, including a polished and an unpolished flint celt, several flint saws and an arrow head, and further that there was evidence of a polished celt having been broken up over the grave, and the pieces deposited with the dead, suggesting superstitious rites in connection with the souls of the departed. The excavation of the ditch of the rampart showed that it had silted up three feet since the Roman period. It has been shown that important evidence as to time may be obtained by examining the silting of rampart ditches and the character of the pottery found at different levels. For although it may be true that the Romans in Hungary and perhaps elsewhere used a kind of glazed pottery, which they did not employ in Britain, yet the pottery of different ages is sufficiently characteristic in this country to determine the period to which it belongs.

12. Notes on the Romano-British cemetery at Seaford, by F. G. Hilton Price, Esq., and John E. Price, Esq. These excavations confirm the results of Mr. Boyd Dawkins's examination of the cemetery at Hardham, Sussex, and establish conclusively the fact that flint flakes and scrapers continued to be used in Britain with interments as lately as the Roman age. The interest of this fact is enhanced by the contemporaneous discovery by Dr. Schliemann of obsidian flakes in the grave, said to be that of Agamemnon, and certainly of the bronze age of Greece, associated with relics of a high style of art. Another parallel may also be drawn between the two, viz., at Seaford a layer of stiff clay was found deposited over the urns after interment, and in like manner the burnt bones of Agamemnon and his companions were found to be covered with a layer of clay four inches thick. Whether this clay was intended simply to preserve the remains, or was introduced with some other signification, is a point upon which a good deal might be said if time permitted. Before leaving the subject of this paper, I desire to

make a few observations upon a note which has been added to the paper since it was read, and which is to the following effect :—Speaking of the camp on the hill, the authors say, “These fortified positions were probably, as suggested by the Rev. E. Turner in writing upon the military earthworks of the South Downs, constructed for the defence of the valleys of the tidal rivers by the intervention of which the continuous line of the South Downs is occasionally broken.” Now, although it is quite true that the intention of a fortified post is much more readily perceived by any one who has been in the habit of studying ground with a view to defence, technical knowledge being of the utmost value in this as in all other branches in explaining the intention of prehistoric remains whose history is lost, yet I am far from thinking that the art of war possesses any great medicine which ought to deter non-professional men from forming a sound opinion upon such a question as this, provided always they will take fully into consideration the facts upon which a sound opinion ought to be formed. Space does not permit me to dwell at length upon the subject here, but I have done so more fully in my paper on the Hill Forts of Sussex, which was published in the *Archæologia*,* and I have there demonstrated the error into which, I believe, Mr. Turner and others have fallen in regard to this matter. The rules of defence have been the same throughout all time, and are extremely simple. And simplest amongst those questions which I would submit to those who think that an organised system of coast defence, such as we have never attained to in modern times, existed in the age of bronze is this,—How, I would ask, is it possible that these forts could have been constructed for the defence of valleys which they do not command ?

They are situated on the summits of the hills far beyond the range of the tidal rivers, with the weapons at that time in use. They are not confined to the coast; do not even exist in any unusual number on the coast, except near Beachy Head, where the sea happens at the present time to be eating away the high

* *Archæologia*, Vol. xlii.

hills upon which the forts stand. They are spread over the interior, not of the South Downs only, but of all the hilly country of Britain, as far as the north of Scotland, and a like distribution of them exists in France and elsewhere. They are all upon the tops of the hills, and are essentially hill forts and not valley defences.*

The prehistoric earthworks of this country are of two kinds, representing two different phases in the civilization of the people. Firstly, the period of the hill-forts, when each tribe had its stronghold to resort to when attacked by neighbouring tribes. Secondly, a period of migration to which the continuous lines of dyke fortification belong, when people moved in large and comparatively well-organized bodies. These dykes, I believe, mark the Scandinavian immigration in England from east to west. To these two prehistoric periods may be added, if we take in modern times, which for anthropological purposes we ought to do, the period of strategical fortresses, when armies moved in very highly organised bodies, accompanied by vast stores of material, which made them jealous of their communications, and unwilling to leave strong places behind them on their path. Such are the modern fortresses of our own time, but no one would dream of applying the principles of strategy which are applicable to this period, to such places as the hill-forts of the South Downs. We must look rather to the savages of Central Africa or New Zealand for an illustration of the mode of life to which they apply.

13. "Remarks on Votive Statuettes found at Tanagra Bœotia," by Col. A. Lane Fox. The question was raised whether the votive statuettes found in the graves, many of which show evidence of the best period of Greek art, are to be considered as survivals of the practice of human sacrifice, or as having a mythological signification.

The view taken by me is that although they undoubtedly

* The argument used by Mr. Fergusson in his pamphlet since published on the Brochs of the Orkney and Shetland Islands, pp. 14—15, to prove that they were not intended for coast defence, applies to this case.

had no mythological import at the time they were interred, they had their origin in mythological sources.

14. A second paper by Mr. Park Harrison, in the discussion upon which he reaffirms his matured belief that the pick marks and other idle scratches found in the galleries at Cissbury are letters inscribed by the prehistoric miners, and I reiterate my equally matured conviction that there is nothing of the kind to be seen.

ETHNOLOGY.—Ten Papers.

1. "On the Probable Origin of the Maoris," by W. S. Vaux, F.R.S. Viewing the traditions, physical constitution, and language of the Maoris, the author comes to the conclusion that in common with the Polynesian race in general, they have sprung from the Mongols of Central Asia, having been driven to the ocean by successive waves of migration down the valleys of the Irrawaddy, Brahmaputra, Yang-tze, and Hoangho. He discards the idea of their being a mixed race, for which, however, much evidence can be shown. Speaking of their carvings, he says, it would be of great interest could we trace on the continent of Asia, or the adjacent islands, any manufactured work nearly resembling that of New Zealand, but he concludes that none such can be traced. On the other hand, I believe that identical patterns of carving can be traced in New Zealand, New Guinea, and Assam. In the two former, the resemblance is so close as to afford certain proof of connection; this, however, affords no proof of identity of race, and the races are, no doubt, very different. It is only through physical constitution, and not by means of either language or arts that racial connection can be traced with confidence. Although the use of the bow penetrated as far as New Guinea, and from thence eastward across the Pacific, it was unknown in New Zealand at the time of its discovery.

2. "On certain Early Forms of Stone Implements in New Zealand," by James Hector, Esq., M.D., F.R.S. Although this paper has an archaeological title, the treatment of it is ethnological,

and I have, therefore, classed it under this heading. Dr. Hector concurs in the general opinion of Mr. Vaux, that the Maoris were immigrants in common with other Polynesians, but considers the question still open as to whether the whole Maori population had a common origin from one migration. He differs from the opinion of Dr. Haast, given in the *Journal of the Ethnological Society*, that the Moas were destroyed by a race of autochthones, and referring to the position of certain stone implements found by Dr. Haast beneath deposits which he believed to be of great antiquity, expresses his belief that the alluvial deposits on that coast take place with great rapidity, owing to the sudden alteration in the courses of rivers.

3. "On the Origin of the South Sea Islanders," by the Rev. Wyatt Gill, B.A. Mr. Gill combats the opinion of Mr. A. Wallace, F.R.S., that the Polynesians are descended from a race which once overspread a vast submerged southern continent, and he believes that the progenitors of the present race entered the Pacific from the south-eastern part of New Guinea, from whence they were drifted eastwards in canoes, and peopled the several islands. The great variety of opinions upon this subject to which I have adverted, points to the deficiency of reliable data, and to the necessity of imparting, if possible, a fresh impulse to our departments of descriptive ethnology and physical anthropology.

4. "On the Ethnology of Scotland," by the Rev. John Earle, M.A. Mr. Earle's paper follows in the lines of the paper of the Rev. J. C. Atkinson in *Journal of the Ethnological Society*, and tends to show that, as East Anglia was peopled from Denmark, so Northumbria and South Scotland received immigrants from Norway. This he shows by resemblances in the language of the two districts, comparisons of which have been rendered practicable by the publication of Vigfusson's Icelandic dictionary.

There is nothing surprising in the discovery that this part of Britain has partaken of the general westerly movement of peoples which has prevailed throughout Europe since the commencement of history, for although the history of this particular

portion of the British isles has been lost, we have evidence in the position of the dykes on the Yorkshire coast, to which I have drawn attention elsewhere, that a large and organised army of invaders entered England and fought their way inland from Flamborough Head, and it is unlikely that any but north-men should have landed in this spot.

5. "On the Sauromatæ or Sarmatæ," by H. Howorth, Esq. Some authors contend that the Sarmatæ were Germans, others, amongst whom is Dr. Latham, that they were Slaves, but Mr. Howorth is confident they were not Slaves, but were the ancestors of the Ossetes, who inhabit the northern part of the Caucasus at the present time. The Sauromatæ, according to Diodorus, were a tribe of Medes, which were carried northward from Asia Minor by the Scythians. The word sar-matæ is compounded of the particle sar or sauro and mede. Sar, according to the author, is the Ugrian term for yellow or red, and means the red or yellow Medes; there were various tribes of the Sar-matæ distinguished by qualifying particles, and amongst them the Taxa-matæ. Taz is the same as As and Taxa-matæ, therefore, means the As-Medes. The As or Asi are a well-known race in the Caucasus, from which the continent of Asia derived its name. These Asi are the same as the Ossi or Ossetes, who now inhabit this region. They differ from the other tribes of the Caucasus in having blue eyes and red hair, thus retaining to this day the characteristics of the Sar-matæ or yellow Medes. I do not pretend to criticise the conclusions arrived at in this paper, to do which with advantage would require all the research which Mr. Howorth has devoted to this interesting subject.

6. "On the Ethnography of the Cimbri," by Canon Rawlinson, in which the author supports the view of the Celtic origin of the Cimbri with all the learning which he is so well known to possess on these and similar branches of inquiry, urging, in its behalf, the resemblance of the name to that of the Celtic Cymri, also the Celtic character of the names of their chiefs, the assertions of many writers, the fact that the Romans used

the Celts as spies in their camp, and some resemblances in their manners and customs. On the other hand, we have for their German origin, the authority of Cæsar, Strabo, Pliny, and Tacitus, also their alliances with the Teutons, and their geographical position in the region of the Germans between the Rhine and the Elbe.

7. "Some Notes on the Nicobar Islands," by W. L. Distant, Esq., which is a sequel to a former paper by him on the same subject, giving a list of authorities on the island, and mentioning, amongst other things, their superstitious dislike to the fabrication of pottery, also his belief that the inhabitants of the Great Nicobar have a close alliance to the Andamanese and the Semangs of the Malay peninsula.

8. "On the South Sea Islanders," by W. C. Ranken, Esq. The author discards Mr. Wallace's idea of the Polynesians being the autochthones of a submerged continent, and believes them to be a mixed race. He thinks the islands were first occupied by Papuans, and a later race, which he terms Mahori, migrated from the Indian Archipelago into Samoa first, and from thence peopled the different islands, partly displacing and partly mixing with the Papuans. He traces their migration from Samoa by means of traditions and customs, and believes that though not Malays, they are a kindred race to the Malays and of the Mongolian stock.

9. "Note on the name Mediterranean," by F. Jeffrey Bell, Esq. Although the author discusses the employment of the term as applied to race by some authors, it is but justice to him to say that he is no advocate for the use of it. Viewing man as a migratory animal, the various races which have drifted westward from Asia into Southern Europe have been arrested by the Mediterranean Sea, which, by necessitating a fixed abode, has caused civilisation to spring up along its eastern and northern shores; we may be safe, therefore, in using the term Mediterranean as applied to culture if not to race. The upshot of his paper is that he discards the use of the word Mediterranean, and advocates the grouping of the Aryan and Semitic languages

under the term Aryo-Semitic. He appears, however, to place more reliance upon language generally as a test of race, than many anthropologists will be disposed to allow.

10. "On the Ethnology of Germany," by H. Howorth, Esq. The author contends that the Saxons north of the Elbe were immigrants, and he traces their migrations by the topography of the surrounding districts and by the names of men and objects.

COMPARATIVE ANATOMY.—*Two Papers.*

1. "On the Scaphoid Skull of a Pole," by Dr. I. Koperniki, giving the anatomical details.

2. "Notes on a Collection of Skulls from the Islands of Mallicollo and Vanikoro," by Professor Busk, F.R.S. These skulls were collected for me by Commodore Goodenough before he died. They are the first from this island that have been received, and they establish the fact of the practice of artificial deformation existing in Mallicollo as determined by Mr. Busk's examination of them. The frontal region is much flattened, and there is also a marked depression behind the vertex. Dr. Barnard Davis had noticed artificial deformation in a skull from Nukahiva, one of the Marquesas isles, and Mr. Wood, in some remarks upon the paper, states that he has seen the same thing amongst the natives of Fortuna and Wallis's Island or UVEA.

BIOLOGY.—*One Paper.*

"A Report to the Anthropometric Committee of the British Association on Measurements of the 2nd Surrey Militia," by Col. A. Lane Fox. The result proves that dark hair and grey eyes are unmistakeably typical of this district. The stature, upon the whole, is low.

PHILOLOGY.—*Two Papers.*

1. "On Prehistoric Names of Weapons," by Hyde Clarke, Esq. Some of the connections given in the table of like words

for different weapons are difficult to follow, but others certainly strike us as remarkable, considering the wide separation of the people by whom they are used. Thus, the word for spear is said to be in India *kipi* and *taka-ba*, and in the African Haussa language, *kebia* and *takobi*. The word in Tamil for arrow, *ambu*, appears to correspond very closely to the Mandingo *tambu* used for spear. So, also, the African Basa word for arrow, *puro*, closely resembles the Carib *parau* for the same weapon. To what extent these resemblances may be taken as proof of connection, is a point which Mr. Hyde Clarke submits for the consideration of anthropologists. Other tables given in the paper showing the connection in the same languages between the weapons and the materials of which they are formed, appear to me to afford more certain indication of origin and proof of connection, even where direct archæological evidence may be wanting.

2. "On the Study of Language," by H. Sweet, Esq., President of the Philological Society. This valuable paper has been read so recently, that I have not yet had an opportunity of looking it over.

SOCIOLOGY.—*Eight Papers.*

1. "On the Belief in Bhutas and Ghost and Devil Worship in India," by M. T. Walhouse, Esq.
2. "On Rhabdomancy and Belomancy or Divination by the Rod and by the Arrow," by Miss A. W. Buckland.
3. "Remarks on Japanese Mythology," by E. B. Tylor, Esq., F.R.S., LL.D.
4. "On the term Religion, as used in Anthropology," by W. L. Distant, Esq.
5. "On the Origin of Numerals," by A. Tylor, Esq.
6. "On Custom and Belief among the Ancient Chaldæans," by A. L. Lewis, Esq.
7. "Remarks on a Collection of Iron Arrow-heads from Southern India," by M. J. Walhouse, Esq.

8. "Note on Serpent and Siva Worship in Central America," by Hyde Clarke, Esq.

I regret that space does not enable me to give an account of the Sociological papers which undoubtedly form one of the most interesting branches of our science. I felt bound to give the place of honour to our inductive over our deductive subjects. These two constitute the law and the prophets, anthropologically speaking, and whilst our main function consists in storing up knowledge for posterity, the prophets may be left to take care of themselves.

The "Remarks on Japanese Mythology," by Mr. E. B. Tylor, will be read with attention by those who take an interest in the only people of modern times who present the phenomenon of high and vigorous progress by a line of development that is distinctly non-European.

Mr. Wallhouse's paper on the "Belief in Ghost Worship in India," suggests many curious parallels between the superstitions of the natives and others which are still flourishing amongst ourselves.

Amongst those subjects with which Sociology deals, the beliefs and superstitions of mankind always attract a full measure of interest. Whilst differing in many details there is a singular uniformity of system which connects the beliefs of the highest with those of the lowest races of mankind. The subject admits of a two-fold treatment, namely, the historical, by which we trace the continuity, migration, and development of the creeds, and the psychological, by which we investigate the phenomena to which the acceptance of the beliefs are due. Our great difficulty in the case of savages and semi-barbarous people is to understand their exact meaning, and this is a source of frequent error.

When therefore we find similar beliefs appearing amongst the members of our own community, it is desirable we should take the opportunity of studying them carefully, where familiarity with the language and culture of the believers, and ample time for observation, enables us to avoid making those mistakes to

which in dealing with other races, Anthropologists are especially prone. In doing this, however, a mind which is itself free from narrowness and intolerance is essentially necessary to success.

Upon the whole the Institute may be congratulated upon the progress that has been made during the past year. Amongst the papers which I have referred to, it will be seen that three relate to tribes that have never before been visited by Europeans.

After deducting deaths and withdrawals, the latter I am happy to say being very few, the Institute during the past year has increased its numbers. The proceeds arising from the sale of the Journal have considerably increased. Thanks to the vigilant economy of our Treasurer, our finances are in a flourishing condition, and the liabilities during the past year have been greatly diminished. I beg now to thank the Treasurer and Directors for their valuable assistance, and to hand over the Presidency to Mr. Evans.

Mr. FRANKS moved, and Lord ARTHUR RUSSELL seconded the motion, "That thanks be returned to the President for his Address, and that he be requested to allow it to be printed."

Carried unanimously.

Biographical Sketch of Mr. W. Bollaert.

Mr. William Bollaert was born in 1807, and at an early age entered into scientific pursuits. He was for some time chemical assistant to Sir Humphrey Davy, Mr. Faraday, and Mr. Brande, at the Royal Institution.

Owing to his father's blindness and consequent inability to attend to his profession of medicine, Mr. William Bollaert was unable to continue his connection with the laboratory of the Royal Institution, and accepted an offer at the age of 18 to go to Peru as assayer and chemist in the survey of some silver mines.

Whilst in Peru Mr. Bollaert devoted his attention to the geography, geology, and natural history of the country, and wrote many interesting papers on these subjects, which were read and published by various Societies.

In 1827 he made, at the request of the Intendente Castilla

(afterwards President of Peru), a survey of the Province of Tarapacu, and his observations on the geography of Southern Peru, including survey of the Province of Tarapacu, and route to Chili by the coast of the Desert of Atacama were read before the Royal Geographical Society.

He also published details of the nitrate of soda formation and new boracic acid mineral in Peru. Mr. Bollaert was one of the first white men who crossed the Desert of Atacama, exploring the country in search of the meteoric iron of Atacama.

Returning to England, Mr. Bollaert endeavoured to make arrangements to explore the East Coast of Africa, the sources of the Nile, and to cross the African Continent, with the assistance of the Government and the Royal Geographical Society, but was unable to get his proposals carried out.

In 1832 Mr. Bollaert fought as a volunteer in the Civil War in Portugal, and in 1868 published "The Wars of Succession of Portugal and Spain from 1826-40," with an Account of the Siege of Oporto and Political and Military Reminiscences. For his services he received the war medal, and was created a Knight of the Order of the Tower and Sword of Portugal.

He was afterwards engaged in assisting Baron de Huber in the financial affairs of Don Carlos and Don Miguel, during the war in Portugal and Spain, and received from Don Miguel the decoration of the Order of Fidelity.

On the abdication of Don Miguel and Don Carlos, Mr. Bollaert went to Texas to explore the country as to its fitness for European emigration, and at the request of H.B.M. Consul at Galveston examined the coasts and interior, and made reports thereon, which were sent to the Admiralty.

Mr. Bollaert wrote several papers on the Indian tribes, the botany, and natural history of Texas for various societies and publications.

On returning to England, his health was much impaired by yellow and intermittent fevers, and he was obliged to remain at home for some time.

In 1853 Mr. Bollaert received the bronze medal of the Society of Arts from the hands of the president, the late Prince Albert, for his "Essay on Salt, with observations on the origin of Salt and Saline Bodies," and giving further details of the inexhaustible quantities of nitrate of soda existing in Peru, and information concerning a new boracic acid mineral.

Mr. Bollaert again returned to Peru and made some interesting antiquarian and ethnological researches in New Granada, Equador, Peru, Chili, accounts of which, with his observations on the pre-Incarial, Incarial, and other monuments of Peruvian nations, are published by Messrs. Trübner and Co.

Several interesting papers on the gold ornaments, pottery, &c., discovered by him in the ancient tombs of Peru were published in the Transactions of the Society of Antiquaries in London, and he presented to the British Museum a number of specimens, amongst others, a very fine specimen of modelling, a vase representing the head of a Chinese ruler.

Mr. Bollaert examined the coal-mines of Chile, and his report was read at the University of Santiago, and before the Royal Geographical Society of London.

For this and for his researches in Peru, the University of Chile elected him a corresponding member.

After remaining for some time in South America, visiting Mexico and the whole of the West Coast, crossing the Andes, and visiting the Argentine Republic, the Brazils, and Paraguay on the East Coast, he returned to England. A severe illness and disease of the lungs quite incapacitated him for any further active life, and during his later years he was unable to take any active part in following his favourite pursuits of science, but from time to time published accounts of his researches for the Royal Geographical Society, the Ethnological Society, the Society of Antiquaries, the Medico-Botanical Society, the Anthropological Institute, and the Society of Literature, and for various scientific publications.

Among his numerous contributions to the Transactions of this Institute and the Societies included in it are:—

- 1st. Observations on the Indian Tribes in Texas: *Journal Eth. Soc.*, ii, 262 (read 10th April, 1850).
- 2nd. On the History of the Meas of Peru and on the Indians of South Peru, *ib.* iii, 132 (12th May, 1852).
- 3rd. On the Jivaro Indians of Ecuador, *ib.*, N.S., ii, 112, 18th February, 1862.
- 4th. On the Tombs of Chiriqué in Veraguas, *ib.*, 147, 18th March, 1862.
- 5th. On the alleged Introduction of Syphilis from the New World. *Journal Anthropol. Soc.*, ii, cclvi, 17th May, 1864.
- 6th. Past and Present Populations of the New World. *Memoirs Anthropol. Soc.*, vol. i.
- 7th. Palæography of the New World, *id.*
- 8th. On the Astronomy of the Red Man, *id.*
- 9th. On the Maya Hieroglyphic Alphabet of Yucatan. *Memoirs Anthropol. Soc.*, ii, 46.
- 10th. Contributions to an Introduction to the Anthropology of the New World, *id.*, 92.
- 11th. Fossil Pottery found on the Shores of Ecuador. *Memoirs Anthropol. Soc.*, iii, 163.

12th. Examination of Hieroglyphics of Yucatan, id., 288.

13th. Ancient Peruvian Graphic Records, id., 351.

Mr. Bollaert had been for many years a corresponding member of the Ethnological Society. On the formation of the Anthropological Society, he joined its Council, and in 1865 and 1866 held the office of honorary secretary. Every one who had the advantage of being associated with him bears the liveliest recollection of his unvarying courtesy and kindness, and of the liberality with which he was always ready to place at the disposal of others his abundant stores of knowledge.

[The Council have been favoured by permission to reprint the following account of the late David Forbes, abridged from the Anniversary Address to the Geological Society of Professor P. M. Duncan, F.R.S., President]:—

DAVID FORBES, late Secretary of the Geological Society, a Fellow of the Royal Society and of the Chemical Society, a most distinguished practical and theoretical mineralogist, metallurgist, and general geologist, was brother to the late Edward Forbes. He was born at Douglas, in the Isle of Man, in 1828, and was partly educated there and at Brentwood, in Essex. Subsequently he entered the University of Edinburgh, and studied chemistry, of which he was very fond as a boy, under Mr. Wilson.

Whilst still very young he was appointed to the superintendence of the mining and metallurgical works at Espedal, in Norway, a post which he held for some years. Capable of enduring great fatigue and full of resources, Forbes travelled far and wide over the country, and studied nature carefully and sedulously. He was especially careful in his investigations of the method of the occurrence of the different minerals in the rocks of the area; and his knowledge of chemistry and petrology enabled him to shed much light upon the causes of the appearance of important mineral species. A careful collector, a most painstaking note-taker, and an admirable analyst, he began to form that collection of rock-specimens, minerals, and analytic results of which he was so proud in after years.

Connected with important industries, Forbes had many opportunities of observing the behaviour of rocks under great heat and pressure, and the study of the peculiar nature of the geology of the country kept these results constantly before him. He became a close observer and a broad thinker upon all those subjects which are connected with physico-chemical changes in rocks, and which at that time were the cause of great debate and much dogmatism.

His work grew, and in his communication to this Society, entitled "On the Causes producing Foliation in Rocks, and on some observed cases of Foliated Structure in Norway and Scotland," and which was read Jan. 31, 1855, Forbes gave an interesting example of the foliation of a blue limestone which rested on mica-schist, near Crianlorich, Perthshire.

Whilst thus investigating some of the most interesting problems of the day, Forbes, ever an active man of business, became a partner in the firm of Evans and Aikin, nickel-smelters, of Birmingham; and this connection necessitated his visiting and carefully surveying, in a mineralogical sense, Chili, Bolivia, and Peru. Residing in the midst of the grandest developments of igneous rocks, and constantly engaged in important economical operations, Forbes at last wrote a paper which will always remain as a classical contribution. It was in 1860, and after his return from South America, that Forbes read his important communication before the Geological Society "On the Geology of Bolivia and Southern Peru." It was the result of observations made from 1857 to 1860, and contained most valuable sections and a map, which give a very excellent idea of the difficulties which the geologist had to encounter, and explained the discrepancies of such previous observers as D'Orbigny (1842) and Pissis in 1856.

This great paper was a model essay, and exhibited the author's geographical knowledge, his correct belief in the metamorphosis of vast masses of rocks, of the influence of contemporaneous and intrusive rocks, and in the grand cycles of physical and chemical change which accompany the evolution of mountain-ranges on the grandest scale.

One of Forbes's most characteristic essays was the lecture delivered before the Fellows of the Chemical Society on Chemical Geology. In it, after asserting that the investigator in the study of Chemical Geology must of necessity call in to his assistance a knowledge of the collateral branches of the natural sciences, he plunged into his subject, and stated that the study of mineralogy, being the alphabet of petrology, shows that many important and common mineral species may have been formed at different times by very diverse processes. He considered that this should warn us against deciding upon any one formative cause to the exclusion of other agencies, and led the argument towards the dangers of receiving, without further knowledge relating to "dissociation," the prevailing doctrines of the origin of the globe and its minerals from the nebular and stellar condition. But, nevertheless, he argued strongly upon the propriety of considering the known facts regarding pressure, fusion, and chemical affinity under exceptional conditions, in forming

an hypothesis relating to the early stage of the globe. He gave it an atmosphere at an early date, and believed that the solid sphere would resolve itself into three great zones. In the first, or crust, highly acid silicates with free quartz would prevail, their bases being chiefly alumina and potash, with minor quantities of soda, lime and magnesia, &c.; below this a second zone of silicates of more basic character and greater density, the bases being lime, magnesia, &c., but with minor quantities of potash; and a still deeper zone of the denser metallic elements in combination with sulphur, arsenic, &c. He imagined that in the first instance we should have the atmosphere next the earth composed of a dense vapour of those compounds which are volatile only at a high temperature, such as the vapour of chloride of sodium. Above this would be carbonic acid, the oxygen and nitrogen, and finally the vapour of water. His idea of the effect of the cooling of such an atmosphere was extremely ingenious, as was also his reasoning upon the manner in which the crust should behave under the influence of cooling and solidification. Finally, after criticising all the data on which these theories can stand, and explaining the difficulties in the way of the aqueous origin of granite, he remarked upon the varying nature of the mineralogy of consecutive plutonic outbursts.

An essay almost as interesting and as suggestive as that just mentioned was written by Forbes in 1869, on "The Nature of the Interior of the Earth." This essay is especially useful, as it places the opinion of Delaunay in opposition to that of Mr. Hopkins regarding the influence of a liquid interior upon precession and nutation, and as it insists upon the possible relative increase of infusibility under great pressure. Forbes, however, quotes Palmieri's observations on the tidal phenomena of the eruptions of Vesuvius against the opinion of the merely local source of origin of volcanic phenomena. Finally, after recognising that the internal specific density of the earth must depend upon something more than pressure, the result of gravitation, he returns to the suggestion made in the paper centrally.

Ever active in scientific enquiry, and labouring in the direction of metamorphic changes, he became an adept in the employment of the microscope in rock-studies; and it was hoped that his great series of analyses would have resulted in a work on petrology.

Much of his time was occupied by the Iron and Steel Institute, of which he was the Foreign Secretary, and also in professional labours in nearly every country in Europe and latterly in Spain. But communications came from his pen, especially to the "Geological Magazine," and to the Anthropological Insti-

tute, and he still found time to fulfil the onerous duties of Secretary to the Geological Society. Upwards of fifty papers were written by him, besides his elaborate reports for the Iron and Steel Institute.

A great linguist, a most genial companion and loving friend, and a man possessed of great energy, he was wounded in spirit by the loss of his wife, who was singularly adapted to his tone of mind. Getting into weak health, he died suddenly on Dec. 8, 1876, and only a few days after he had taken part in a discussion at one of the meetings of the Geographical Society.

To this eloquent and well-earned tribute, it may be added that he was present at the last Council of the Anthropological Institute held in his lifetime.

He became a member of the Council of the Ethnological Society in 1869, and on the 21st July, 1870, read before that Society the admirable paper "On the Aymara Indians of Bolivia and Peru," which appears in this Journal, New Series, iv, 193. On the formation of the Anthropological Institute, he became a member of its Council, and continued so until his death.

The Scrutineers then made their report, and the following officers and Council for the Institute for the year 1877-78 were declared to be elected unanimously:—

President.—John Evans, Esq., F.R.S.

Vice-Presidents.—Prof. Geo. Busk, F.R.S.; Hyde Clarke, Esq.; Col. Lane Fox, F.R.S.; A. W. Franks, Esq., M.A., F.R.S.; Francis Galton, Esq., F.R.S.; E. Burnet Tylor, Esq., F.R.S.

Directors and Hon. Secs.—E. W. Brabrook, Esq., F.S.A.; Capt. Harold Dillon, F.S.A.

Treasurer.—J. Park Harrison, Esq., M.A.

Council.—J. Beddoe, Esq., M.D., F.R.S.; J. Barnard Davis, Esq., M.D., F.R.S.; W. Boyd Dawkins, Esq., F.R.S.; W. L. Distant, Esq.; Robert Dunn, Esq., F.R.C.S.; Chas. Harrison, Esq., F.S.A.; H. H. Howorth, Esq., F.S.A.; Prof. T. McK. Hughes, F.G.S.; Prof. Huxley, F.R.S.; A. L. Lewis, Esq.; Sir John Lubbock, Bart., F.R.S., M.P.; R. Biddulph Martin, Esq.; F. G. H. Price, Esq., F.R.G.S.; J. E. Price, Esq., F.S.A.; Prof. Rolleston, M.D., F.R.S.; F. W. Rudler, F.G.S.; C. R. Des Ruffières, Esq., F.R.S.L.; Lord Arthur Russell, M.P.; Rev. Prof. Sayce, M.A., M.R.A.S.; M. J. Walhouse, Esq., M.R.A.S.

A vote of thanks to the Scrutineers for their labours was then passed, and the meeting separated.

ANTHROPOLOGICAL MISCELLANEA.

THROUGH the kindness of Commander Cameron, R.N., C.B., and Messrs. Daldy and Isbister, the publishers of "Across Africa," the following woodcuts from that work are given, as illustrating many of the objects referred to by Commander Cameron, in his lecture at the Royal School of Mines, Jermyn Street, on May the 23rd, 1876, vol. vi, p. 117 of the Journal of the Institute.

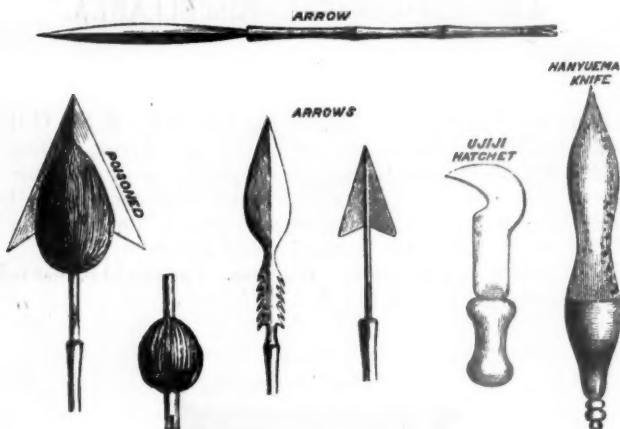
Fig. 1.—Arms and ornaments, Wagogo. The shield is that referred to by Colonel Fox, p. 178, line 7.

Fig. 1.



Fig. 2.—Arms, &c., Ujiji. The method of applying the poison to arrows is shown and the Manyuema knife is of the form mentioned by Colonel Fox, p. 178, line 1.

Fig. 2.



The second arrow from the left has a corrugated blade, as referred to by Commander Cameron, p. 176, line 5.

Fig. 3.—A handa, see p. 174. The copper is brought from Urna, in pieces, called "handa," varying in weight from $2\frac{1}{2}$ lbs. to 3 lbs. They are cast in the rough shape of a St. Andrew's Cross, and the diagonal measurement is from 15 to 16 inches, while the arms are 2 inches wide and $\frac{1}{2}$ an inch thick. Many of them have a raised rib along the centre of the arms.

Fig. 3.

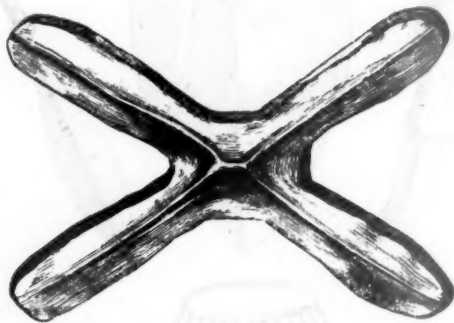


Fig. 4.—Whistle, hatchet, and pillow, Ugubha. All the men carry whistles, with which they signal to one another on the road.

Fig. 4.

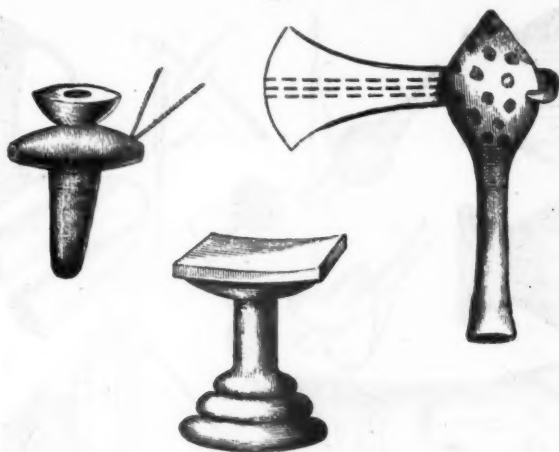


Fig. 5.—Arms, &c., Lovalé. 1, fish spear; 2, 3, spears; 4, 5, 6, arrow heads; 7, 8, 9, modes of stringing bows; 10, 11, 12, knives; 13, 14, walking sticks; 15, charm; 16, 17, 18, drums; 19, iron gong (referred to by Colonel Fox, p. 177, l. 3 from bottom); 20, 21, iron bells; 22, musical instrument; 23, marimba; 24, sticks for playing marimba 25, rattle.

Fig. 5.

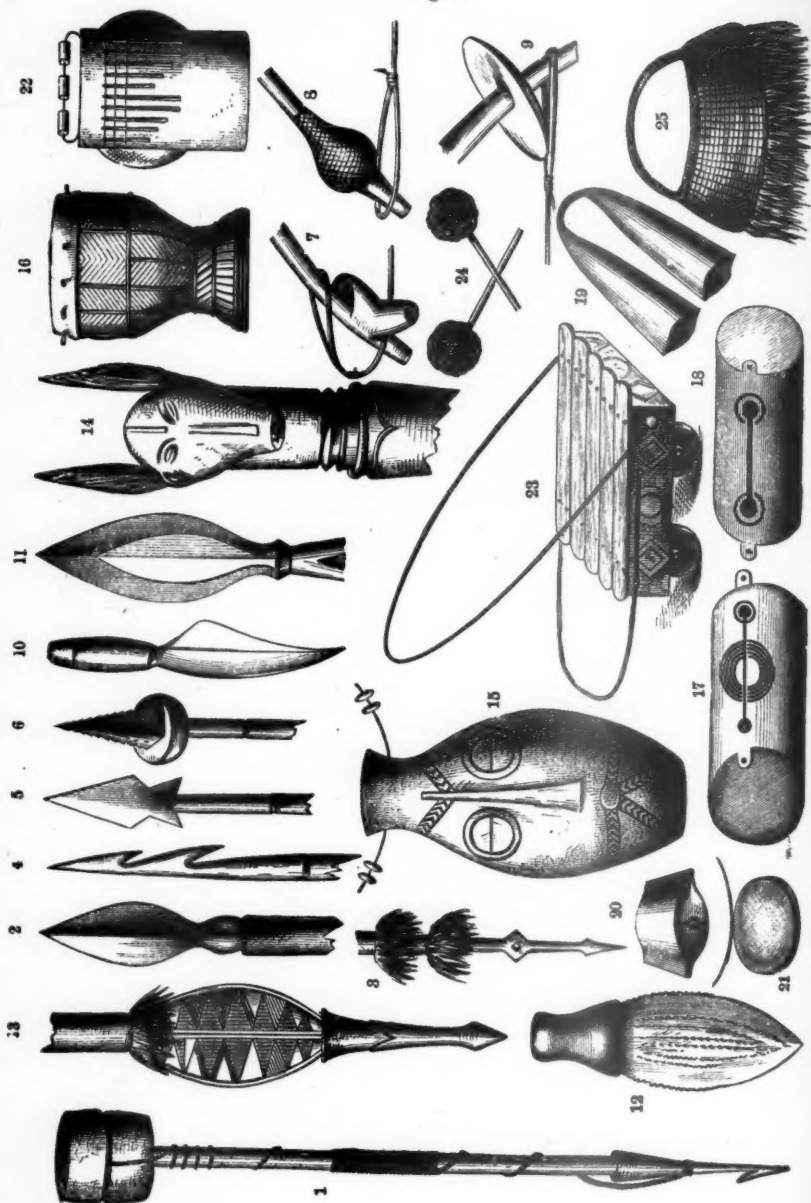


Fig. 6 and 7.—Arms, &c., Lovalé, see page 174. In Fig. 6 is shown the method of attaching the feathers to the arrow, and the various forms of metal arrow head. A wooden arrow head or bolt is also shown.

Fig. 6.

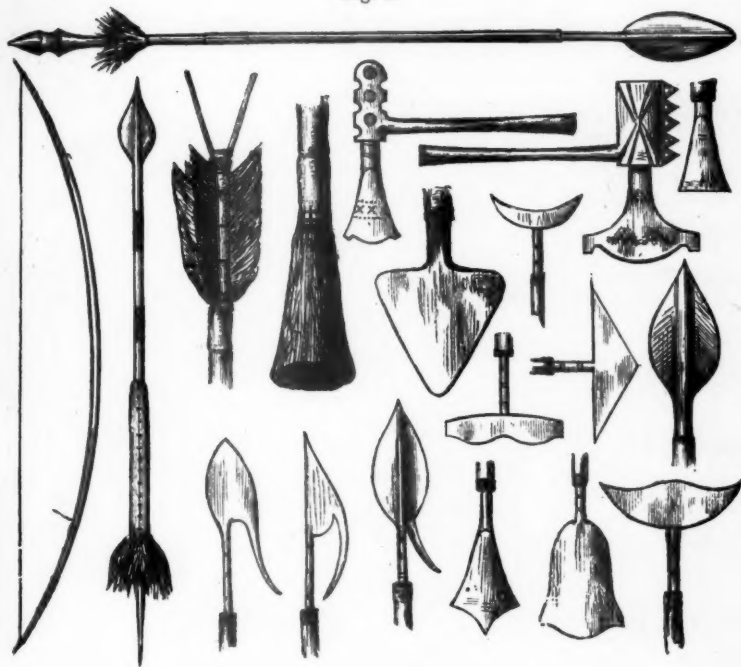


Fig. 7.



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CORRIGENDA ET ADDENDA.

VOL. VI.

- Page 9, line 22 from the top, for "Philosophical," read "Philological."
 " 92, " 4, read "before the Anthropological Society of Paris, March 19th, 1863."
 " 158, " 2 from bottom, for "ten miles," read "ten metres."
 " 160, " 15 from bottom, for "sleitshoenen," read "sluit-steenen."
 " 161, " 18 from top, for "Yanssen," read "Janssen."
 " " 5 from bottom, for "Part of the village of Odoven," read "Part of the church of the village of Odoorn."
 " 162, " 13 from top, for "res hullins," read "res nullins."
 " " 13 from bottom, for "Finaarlo," read "Tinaarlo."
 " " 6 from bottom, for "Baron Slaet," read "Baron Sloet."
 " " 4 from bottom, for "Minister Sock," read "Minister Fock."
 " 163 " 2 from top, for "Y. L. G. Gregory," read "J. L. G. Gregory."
 " 164 " 6 from bottom, for "Odovru," read "Odoorn."
 " 165 " 9 from top, for "Rumen," read "Buinen."
 " 212, in note *, for "Capt. Tule," read "Capt. Zoule."
 Plate facing page 5 should be Plate I.
 " " 80 " " II, III, IV.
 " " 112 " " V.

NOTICES.

M. G. de Mortillet announces that it is proposed to organise an Anthropological exhibition at Paris in 1878, comprising—1. Anthropology and Craniology; 2. Ethnography of France and other countries, especially savage ones; 3. Prehistoric Archæology or Palæethnology; 4. Linguistic Anthropology. Societies or individuals desirous of taking part in the above, are requested to communicate with M. G. de Mortillet, Château de St. Germain en Laye (Seine et Oise), stating the class of objects proposed to be exhibited.

Prof. Virchow, of Berlin, announces that casts of the anthropomorphic apes lately living in the Gardens of the Berlin Aquarium, and models of the existing gorilla in the same collection, are for sale, as also photographs of the above. Particulars may be obtained from Dr. Hermes, of the Berlin Aquarium.

The formation of a scientific club for Vienna, under the presidency of his Excellence, Dr. A. Ritter von Schmerling, is announced. It is situated in the Eschenbachgasse.

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